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## A Paper
ON
# THE INDICATIONS FOR THE INDUCTION OF ABORTION*
BY

BECKWITH WHITEHOUSE, M.S., F.R.C.S., F.C.O.G.
PROFESSOR OF MIDWIFERY AND DISEASES OF WOMEN, UNIVERSITY OF BIRMINGHAM; HONORARY GYNAECOLOGICAL SURGEON, GENERAL HOSPITAL, BIRMINGHAM

By "abortion" is meant expulsion of the developing ovum from the uterus before the foetus, by ordinary standards, is generally considered to be viable—that is, before the end of the seventh month of gestation. The induction of abortion, therefore, implies the sacrifice of a potential individual—an individual, be it remembered, with legal rights—in the interests presumably of the mother; or perhaps, as some to-day would have it, in the interests of the community or State.

My first observation in opening this important discussion upon the indications for such procedure is that to-day we are not by any means considering a new problem. The same matter has exercised scientific and lay minds as long as records are available. We have only to turn to the Hippocratic oath, and to the accounts of medicine and social life in Rome and Athens, to appreciate the fact that the problems we are to consider exercised very deeply the minds of responsible people in earlier, but not necessarily less enlightened, civilizations. Is it perhaps such a strange coincidence that during the luxurious conditions of life which preceded the fall, not only of the Roman, but of other great empires, abortion-mongering occupied a not insignificant place in the sexual licence of the time? Abortion was approved, and the same argument advanced that has again recently been heard—that the unborn foetus is not a separate being, but to be disposed of as the mother thinks fit! Professor Sydney Smith has observed that during the latter years of Roman civilization abortion was often performed for sheer vanity, "so that the breasts should not have their shape spoilt by lactation, nor the bellies by the scars of pregnancy."

### ABORTION AND MODERN SOCIAL FACTORS

To-day the civilized nations of the world are again faced with national crises. Standards of life, we are told, are changed. In plain language this implies not necessarily an improved, but an altered, outlook on life. The motor car, the wireless set, and a "place in the sun" are regarded as greater assets than a family. The birth rate is still falling, owing to a lower marriage rate, the widespread promulgation of contraceptive practices, and the combined economic factors of unemployment and high taxation. We must also remember that to-day no nation stands alone. Owing to the ease of communication through the agency of the Press, broadcasting, and the interchange of ideas at conferences, and so forth, there is a very great tendency for peoples of different nationality to act in concert. Particularly is this so in matters of social policy: I might even use the word "fashion." What is approved by one people to-day is likely to influence very largely the policy of another nation to-morrow.

Now I think you will agree that in sexual matters the general public in Great Britain is to-day being greatly influenced by current practices in Europe. The "man in the street" knows perfectly well that on the Continent he can arrange for an undesired pregnancy to be terminated, and I have heard it stated that "if he knows his way about he need not trouble to leave this country; the necessary medical indication will be found." Such a remark as this implies a slander upon the mass of our profession, but it emphasizes the necessity for a careful revision of *approved* indications for performing abortion. For this reason we should welcome the opportunity we have to-day of discussing our position as a profession in relation to the altered conditions of life and the urgent problems which are continually being thrust upon us by various sections and individuals of the lay public. In this matter of abortion we have a great responsibility. We are, of course, the servants of the public, but at the same time we are the preservers of the national health. It is therefore our duty not necessarily to acquiesce in any policy actuated by the social life of the times, if we honestly believe that by so doing it is detrimental to the nation's well-being. With the economic and moral aspects of the problem we are not concerned. These are matters which can be relegated to others better qualified to express a considered opinion.

### DANGERS OF INDUCED ABORTION

Our duty it is, however, and our sole duty, to inform the non-medical mind of the possible risks entailed in procuring an abortion, not only to life, but also to the subsequent health. Let there be no mistake about it, in spite of all that has been said and written to the contrary during recent months there is an appreciable risk involved in emptying a uterus of the products of conception. We know the recent facts that have emanated from Russia and the statements that thousands of abortions are there procured annually without an anaesthetic and without so-called complications. We know also of the abortions that have been procured nearer home, in Germany, during the past year by injections into the uterus of "interruptin," "provocol," and other "Heiser" pastes and ointments of an abortifacient nature. Let us remember, however, that Engelmann[1] recorded five deaths in Germany last year from abortion induced by this method, and many observers have noted various risks and post-operative complications which have attended the use of intrauterine abortifacient pastes. It is necessary to emphasize this matter owing to the views held by some individuals that abortion can be safely procured, and that it does not necessarily entail any risks to the mother. The procuring of abortion is not always safe even in experienced hands. With all the care possible, and with all the surgical precautions of hospital practice, I have lost a patient from sepsis whose uterus I had evacuated of its contents for therapeutic reasons. On another occasion I had to perform an immediate hysterectomy on a patient whose uterus I perforated in spite of every care, as I thought. What would have been my position, I should like to know, if these surgical accidents, which I venture to say may happen to any of us, had not been performed without a proper and approved indication?

### *Maternal Mortality*

Facts such as these should be known, because there is no doubt that the procuring of abortion is regarded by many respected members of the lay public in the light of being a "small operation." They seem to be under the impression that the removal of a gestation from the uterus is as easy and simple a matter as lifting an egg out of a box. I could wish that they might be present sometimes in the operating theatre, and see for themselves what actually takes place. According to Pust[2] 8,000 women die every year in Germany from the consequences of abortion, and 25,000 become permanent invalids. Sellheim, quoted by Pust,[2] has observed that between 10,000 and 20,000 women in Germany are seriously ill of puerperal fever every year, and 3,000 die annually of this disease; the



* Read in opening a discussion in the Section of Obstetrics and Gynaecology at the Centenary Meeting of the British Medical Association, London, 1932.

same author notes that it is "exceedingly probable that the majority of these cases of illness and death are due to abortive practices." Puerperal sepsis following abortion is commonly of a most virulent nature, and considerably swells the statistics of the fatal cases of infection admitted to institutions.

Munro Kerr and MacLennan,[3] in calling attention to the factor of negligence of the patient or her friends as a prominent cause of maternal mortality, have recently noted that this operates particularly in cases of abortion. Twenty-six fatalities occurred in a series of 3,453 cases of abortion admitted on a five-year basis to the Glasgow Royal Maternity and Women's Hospital. Eighteen of these twenty-six patients are grouped as dying from septicaemia. As Munro Kerr rightly observes, social, economic, and occasional criminal reasons probably account for the notorious neglect of women to notify the onset of abortion.

In the statistical report of the League of Nations on maternal mortality it is stated that "as a cause of maternal deaths abortion has become more important than delivery at term." Another aspect of the risks incidental to procuring an abortion is seen when the after-histories of a series of women who have had several abortions are examined. Many of these patients subsequently suffer from irregular, and at times prolonged and profuse, uterine bleeding. This has been variously attributed to local pathological states in the uterus, infection of the endometrium, chronic subinvolution, and so forth. I am inclined to think that the cause of these symptoms may be more deep-seated and related to ovarian and possibly anterior pituitary dysfunction. Wiesner[4] has drawn attention to the biological considerations involved in the sudden disruption between the products of conception and the maternal organism. In his words, "it is completely untrue and one of the most radical errors ever made" to think that such a shock can be administered to the endocrine system without interfering with the health and biological conditions of the mother. The ovum, and particularly the placenta, represents a very active endocrine gland, and the sudden withdrawal of its secretion may have serious repercussions upon the other elements of the endocrine system. What happens to the corpus luteum when a healthy active pregnancy is suddenly terminated? Does it suddenly atrophy?—and what is the influence upon succeeding ovulation? From a short series of observations I am inclined to think that there is a connexion between abortion and some fibrocystic conditions of the ovary, and that post-abortional haemorrhage may be not unconnected with these induced states in the ovary.

### Abortion and Notification

In Great Britain abortion is not notifiable, and it is an exceedingly difficult matter to obtain reliable information upon the incidence of spontaneous abortion, and almost impossible in the case of criminal abortion. In view of the importance that septic abortion occupies in relation to fatal puerperal septicaemia, it would seem that the time is opportune for the profession again to consider the necessity for a system of notification and registration of abortions. Even allowing for a wide margin of error, I cannot help feeling that notification could not be other than beneficial. It would emphasize the importance that the medical profession attaches to the termination of pregnancy; it should also exert a favourable influence upon maternal mortality from abortion, and at least provide reliable information upon the medical indications for terminating pregnancy.

As matters stand to-day the only information available, so far as Great Britain is concerned, is contained in the reports of the gynaecological and obstetrical departments of the various hospitals. It should be remembered that this information is not, in a sense, reliable in that it is based upon patients admitted to hospital, and not, therefore, healthy individuals.

### Incidence of Abortion

A year or two ago I analysed the incidence of abortions amongst 3,000 hospital and private patients, and found that the ratio of abortions to births was 1 to 4.7. In a total of 11,430 pregnancies the percentage of abortions was 17.2, and amongst the total 3,000 cases the percentage of women who had aborted at some time or other during their sexual life was 35.3. Grouping the cases into pre- and post-war years, it was interesting to find that the proportion was almost the same. Personally, I do not think that the practice of illegal abortion is increasing in this country to the extent that some people believe. Contraceptive measures are undoubtedly one factor in lowering the incidence of the demand for abortion, and within recent years I have been rather impressed with the attitude of mind of the woman who has practised contraception and who has failed to attain her object. Such a woman instinctively seems to feel that she has the right to demand the termination of an unwanted pregnancy. The criminal aspect of the matter does not appear to enter her mind in the least. Another factor, and one with which we are intimately concerned, is what I may refer to as the more broadminded attitude of the medical profession to-day towards the problem of therapeutic abortion. There is not the least doubt that pregnancy is being terminated nowadays for so-called indications which, twenty-five years ago or even less, would have condemned anyone who ministered to such demands to the obstetric underworld!

It was not many years ago that Dr. Eden[5] foreshadowed, at the British Medical Association Meeting in Nottingham, a change of medical policy in relation to therapeutic abortion, and advocated the necessity for a more humane approach to the problem. Recent years have certainly witnessed a very considerable swing of the pendulum in the direction of what is termed "scientific humanism," stimulated by the recognition that much human misery can be prevented by an intelligent regulation of genetic processes. This is all to the good if by such a policy women who find themselves in an unhappy predicament are induced to turn first to the medical profession rather than to the illegal abortion-monger with his nefarious stock-in-trade.

On February 29th, 1932, a weaver and a wool-teaser at the Leeds assizes were indicted before Mr. Justice Humphreys for killing by means of an illegal operation a widow with seven children who had remarried and was again pregnant. In the defence the "ethics of abortion" was raised by counsel—certainly a strange term to use in connexion with an offence which, as Mr. Justice Humphreys observed, is a crime under the law of the country. Such a case as this would serve to emphasize the seriousness with which we must approach the problem. I cannot help feeling that, had that 8-para consulted her own doctor, the pregnancy might very rightly, properly, and safely have been terminated, not illegally, but after full consideration of the medical indications involved.

### Therapeutic Abortion as a Legalized Procedure

In a recent discussion at the Royal Society of Medicine on the medical indications for the premature termination of pregnancy, I pointed out that our difficulties are not so much concerned with the major as with the minor indications.[6] Medical policy is fairly well standardized

as to the " major " reasons for intervention. When, however, we consider the minor indications, the word " standard " certainly has no place. The termination of pregnancy is being practised to-day for reasons which have no relation to preserving the life of the mother, but are justified on the grounds that her health would subsequently be impaired had the gestation continued. Here there can be little doubt that in the present position of British law the medical profession is flirting with illegal practices. The operation of procuring abortion in Great Britain is legal only under certain well-defined circumstances—namely, that it is done to save the life of the mother, and that the seventh month of pregnancy has been reached. In the amending Act of May 10th, 1929, there is *no reference to the legality of therapeutic abortion carried out solely in the interests of preserving the health of the mother*, and the medical profession has at present no legal mandate to perform such operations. The inclusion in this Act of the words " seventh month of pregnancy," and the omission of all reference to the health of the mother, as distinct from her life, have left the matter in a most unsatisfactory position, and have imposed unnecessary hardships upon the medical profession acting *bona fide* in the interests of the mother.

## MAJOR INDICATIONS FOR THE INDUCTION OF ABORTION

Parry[7] has recently summarized as follows the conditions which may be regarded as indications for the production of artificial abortion: (1) the toxaemias of pregnancy which do not yield to treatment (eclampsia and uncontrollable vomiting) ; (2) chronic diseases aggravated by pregnancy (diabetes, nephritis, tuberculosis, heart disease, malnutrition, and sometimes mental and nervous states) ; and (3) obstruction of the passages owing to a contracted or deformed pelvis, or contraction of the vagina due to scar tissue.

This grouping, I think, represents, as Parry says, a fair view of professional opinion as it now stands. It includes all the major indications, which indeed are perfectly legal, and which have the stamp of approval both of the medical and of the legal profession. It does not include, however, what I have elsewhere[6] called the " minor " indications, which by some are regarded as sufficient justification for performing what in the present position of British law is really an illegal act. In any collective investigation the number of such minor indications does not figure largely, but I feel that there is a growing tendency to-day for this group to increase. On the legitimate stage abortion-mongering is not a popular pastime on this side of the Channel, and the number of therapeutic abortions carried out in hospitals is few. On looking through my own figures I find that in ten years I have emptied the uterus of its contents on sixty-three occasions, an average of 6.3 cases per annum.

In five recent years the total number of induced abortions in eight London and provincial hospitals was 267, an average of just over 50 per annum, or 6 per institution. Amongst a total of 16,592 private and hospital patients (the details kindly supplied by leading British obstetricians), the number of therapeutic abortions performed was 112, or 0.6 per cent. These figures, as I say, are based upon the work carried out in the large teaching hospitals, but I have an impression—I may, of course, be quite wrong—that similar operations are being performed by others which are not recorded, and about which no figures are obtainable. I base this assumption upon the personal knowledge of abortions that have been performed " for medical indications " whose *bona fides* seems to me a little suspicious. The reason that it is impossible to obtain correct information is naturally because the indications are not generally recognized as such by the bulk of the medical profession. It is very desirable, therefore, that the whole matter should be thrashed out, especially in the light of these " minor indications."

I therefore do not propose to waste time by consideration of all the major reasons for therapeutic abortion, which have been so fully and admirably discussed during the last year or two at the Royal Society of Medicine. The " pros " and " cons " for intervention in cases of pregnancy complicated by tuberculosis, morbus cordis, and the various manifestations of pregnancy toxaemia have all been debated at length. These indications constitute the great bulk of cases admitted to hospital for therapeutic abortion, as shown in the tables which I submit, based upon the collective figures obtained from a recent inquiry into the practice of British teaching hospitals. In connexion with heart disease Dr. T. F. Cotton's[8] remarks should be remembered. Congestive failure is a contraindication to pregnancy, and when the auricles are fibrillating and the heart enlarged pregnancy should be terminated *so long as the gestation is in the early months of pregnancy*. When signs of failure develop in the later months of pregnancy the risk to life is *increased by terminating the pregnancy* rather than by allowing the woman to go to term. There is to-day a tendency to allow more women with heart disease to continue their pregnancy, a practice supported by the experience of Dame Louise McIlroy, Dr. Rendel, and Dr. Crighton Bramwell.[6]

TABLE I.—*Indications for Therapeutic Abortion*

(Collective Figures from British Hospitals on Five-year Basis.)
(Gross Analysis 690 Cases.)

| | |
|---|---|
| **(A) GENERAL DISEASES.** | |
| Diseases of the heart | 63 |
| " " kidneys | 60 |
| " " lungs and pleura | 52 |
| Toxaemias | 57 |
| Diseases of nervous system | 22 |
| " nutrition | 21 |
| Mental diseases | 10 |
| Infections | 7 |
| Malignant disease | 7 |
| Unclassified | 10 |
| Total | 309 |
| **(B) OBSTETRICAL AND GYNAECOLOGICAL DISEASES** | |
| Diseases of the uterus | 11 |
| " " ovaries | 1 |
| " " pelvic floor | 5 |
| " " pelvic peritoneum | 1 |
| " " ovum | 363 |
| Total | 381 |

In the second table an analysis has been made of all the indications put forward by British operators in a collective series of 690 abortions performed on therapeutic grounds. The first point that emerges from the consideration of this table is the length and diversity of the various indications cited. It fully justifies my division into major or accepted, and minor or debatable groups.

## MINOR INDICATIONS FOR THE INDUCTION OF ABORTION

The second point is that the minor indications are undoubtedly only justifiable if the health of the mother is taken into consideration, as distinct from any menace to her life. They are, therefore, from the present standard of British law, illegal practices, and it will only be the weight of medical and lay opinion that can change this attitude. It is necessary to introduce the word " lay " because of the pressure which is constantly being made to-day upon the medical profession by members of the lay public. A husband will criticize very severely any practitioner who allows a pregnancy to continue if by so doing the subsequent health of his wife is endangered. Similarly, a wife who is already the mother of five or six children is not unlikely to bring very weighty arguments forward in support of her contention that another

TABLE II.—*Indications for Therapeutic Abortion*

(Collective Figures from British Hospitals on Five-year Basis.)
(Detailed Analysis 690 Cases.)

(A) GENERAL MEDICAL AND SURGICAL DISEASES.

| | |
|---|---|
| **DISEASES OF THE HEART:** | |
| Mitral stenosis | 33 |
| Mitral incompetence | 5 |
| Mitral and aortic lesions | 3 |
| Congenital pulmonary stenosis | 2 |
| Malignant endocarditis | 1 |
| Myocardial degeneration | 9 |
| Heart-block | 1 |
| Lesion not stated | 9 |
| **DISEASES OF THE KIDNEYS:** | |
| Chronic nephritis | 26 |
| Albuminuria (cause unstated) | 17 |
| Acute nephritis | 2 |
| Acute pyelitis | 11 |
| Tuberculosis | 2 |
| Cystic disease | 1 |
| Previous nephrectomy | 1 |
| **DISEASES OF THE LUNGS AND PLEURAE:** | |
| Tuberculosis | 45 |
| Chronic bronchitis and asthma | 4 |
| Acute dyspnoea (cause unstated) | 1 |
| Chronic pleurisy | 1 |
| Chronic empyema with sinus | 1 |
| **TOXAEMIAS:** | |
| Hyperemesis | 52 |
| Pre-eclampsia | 2 |
| Jaundice | 2 |
| Toxic goitre | 1 |
| **DISEASES OF THE NERVOUS SYSTEM:** | |
| Epilepsy | 8 |
| Parkinson's disease | 1 |
| Chorea gravidarum | 4 |
| Post-encephalitic states | 5 |
| Tabes dorsalis | 1 |
| Disseminated sclerosis | 1 |
| Hemiplegia | 1 |
| Spinal tumour | 1 |
| **DISEASES OF NUTRITION:** | |
| Diabetes | 11 |
| Obesity | 2 |
| General asthenia: | |
| 1. With rapid loss of weight | 2 |
| 2. "Six months after Caesarean section" | 1 |
| 3. "After very recent pregnancy" | 1 |
| 4. "With severe varicose veins of vulva and legs" | 1 |
| 5. "With severe anaemia" | 3 |
| **MENTAL DISEASES:** | |
| Insanity | 3 |
| "Suicidal tendencies" | 3 |
| Previous puerperal mania | 3 |
| "Bad mental family history" | 1 |
| **INFECTIONS:** | |
| "Recurrent puerperal fever" | 3 |
| Syphilis (with arsenical poisoning) | 1 |
| Syphilis ("with toxaemia") | 1 |
| Malaria | 2 |
| **MALIGNANT DISEASE:** | |
| Carcinoma mammae | 3 |
| Carcinoma of lungs | 1 |
| Malignant glands of neck (sarcoma) | 1 |
| Sarcoma of hip | 1 |
| Fibrosarcoma of rectus abdominis | 1 |
| **UNCLASSIFIED:** | |
| "Post-operative abdominal weakness" | 1 |
| Abdominal sinus following laparotomy | 3 |
| Rheumatoid arthritis with extensive ankylosis | 1 |
| Pott's disease of spine with kyphosis | 1 |
| Tuberculous glands of neck | 1 |
| "Endocrine deficiency" | 2 |
| "Lead poisoning" | 1 |

(B) OBSTETRICAL AND GYNAECOLOGICAL DISEASES

| | |
|---|---|
| **DISEASES OF THE UTERUS:** | |
| Fibroids | 5 |
| Retroversion, impacted | 3 |
| Sacculation of pregnant uterus | 2 |
| Carcinoma cervicis | 1 |
| **DISEASES OF THE OVARIES:** | |
| Cystoma | 1 |
| **DISEASES OF THE PELVIC FLOOR:** | |
| Prolapse (second degree) | 1 |
| „ (third degree) | 2 |
| After plastic repair of pelvic floor | 2 |
| **DISEASES OF THE PELVIC PERITONEUM:** | |
| Chronic perimetritis with adhesions | 1 |
| **DISEASES OF THE OVUM:** | |
| Abortion, threatened or inevitable | 338 |
| Molar pregnancy (carneous) | 4 |
| „ „ (hydatidiform) | 7 |
| Hydramnios (acute) | 4 |
| „ (chronic | 2 |
| Anencephalus | 1 |
| Placenta praevia | 6 |
| Prolapse of cord | 1 |
| Total | 690 |
| (Excluding abortion) | 352 |

pregnancy is undesirable. We can refuse to intervene, as many of us do, and we have the support of the law at the back of us, but by so doing are we not in reality throwing the Christian to the lions—in other words, facing the probability that a woman will risk not only her health, but her life, by resort to illicit practices?

It is, of course, impossible for me here and now to discuss in detail the long list of minor indications set out in the table which I have submitted for your consideration. I will therefore content myself with drawing attention to but a dozen of the various reasons which have been cited recently as being sufficient to justify emptying a pregnant uterus of its contents.

1. Very recent pregnancy.
2. General debility with loss of weight.
3. After operations upon the abdomen—for example, acute appendicitis with drainage, which has left widespread adhesions.
4. Because a previous pregnancy has terminated in Caesarean section, and the patient is unwilling again to submit to a major operation.
5. To prevent increasing prolapse of the pelvic viscera.
6. After plastic operation upon the pelvic floor for genital prolapse, in order to avoid repetition of the operation.
7. For eugenic reasons, because of a bad mental history in one or other of the parents, or because of the previous birth of a mentally defective child.
8. Because the potential mother has shown evidence of mental instability—for example, suicidal tendencies and so forth.
9. Because a previous pregnancy has been followed by local or general sepsis.
10. For economic reasons in women of very high fertility with families of ten or more.
11. For coexisting malignant disease.
12. Because the continuation of pregnancy might be fraught with danger to the mother, as in the case of a wife going abroad to join her husband where medical assistance was not easily obtainable.

Abortion has actually been produced by reputable members of our profession for all these indications, and I think you will agree that we must have advanced—or should I say retrogressed?—a very long way from the earlier standards. Are we right or wrong in our present attitude towards such and similar problems? It is, I fully realize, exceedingly difficult, indeed almost impossible, to lay down a set of indications for the termination of pregnancy which may become generally applicable. Even on such a matter as rapidly repeated pregnancy it is very hard to dogmatize. Some women are mentally and physically equipped to be the mothers of large families, and are never so happy and well as when so employed. To others each recurring pregnancy is one more milestone towards a possible breakdown of the vital processes, and in such cases abortion or abortion-sterilization seems on the face of it to be not only justified, but indicated.

### THE ONUS OF RESPONSIBILITY

Personally I feel that it is very difficult to generalize, and probably the fit and proper person to decide in a concrete case when pregnancy should be terminated in the absence of gross organic disease is the family practitioner. He alone is in the position to assess with their true value all the arguments for and against intervention. This country is fortunate in its family practitioners, and when one is abroad and comes into contact with the state of affairs that sometimes exists one appreciates to the full what other nations miss. It will be a bad day for Britain when, if ever, we become a profession of specialists. Judging by other countries, we shall lose our sense of values, and the nation will have lost one of its most precious heritages.

One word more before I finish. Whenever abortion is to be induced I personally always insist upon the patient entering either a hospital or a reputable nursing home, and that the operation is conducted with the same publicity as any other surgical procedure. There must never be any "hole-and-corner" business about it. As I have said before, either it is right or it is wrong. Let us then, if we are agreed that it should be so, broaden our views and increase our standards; but above all let everything be "above board," and have nothing in common with the methods of the illegal abortion-monger and professional abortionist. Finally, in this as in any other medical problem, let us act upon our own convictions, and not be

"jockeyed" into a false position against our own knowledge of what is right by the purely personal views of some individuals, stimulated perhaps by the activities of a sensational Press.

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# THE ROLE OF MANIPULATION IN THERAPEUTICS*

BY

JAMES MENNELL, M.D.CANTAB.

MEDICAL OFFICER, PHYSICO-THERAPEUTIC DEPARTMENT, ST. THOMAS'S HOSPITAL

To-day few members of the medical profession fail to appreciate the value of manipulative treatment and to realize that it can sometimes succeed where all else has proved of no avail. In spite of this recognition, many practitioners are still unaware of the occasions when the aid of manipulation should be invoked, of the conditions to which it should be applied, of the means that should be taken to discover the likelihood of benefit being derived from it, and even of what it actually involves. They will turn for authoritative guidance to the Physical Treatment Section of this Association, and in this discussion we must see that they receive it.

## GENERAL CONSIDERATIONS

The first point for discussion must surely be, "What is the meaning of manipulation?" A definition should be easy, but it is not. Hitherto the physical therapeutist—as distinct from the electrotherapist—has had at his disposal three things:

1. Massage.
2. Passive movement.
3. Active movement { assisted / resisted { eccentric. / concentric.

Manipulation can hardly come under any of these heads. Dangerous confusion already surrounds the interpretation of the term "passive movement." Surgeons have always spoken of any movement performed for the patient as "passive," even though force has been employed to break down adhesions. The physical therapist considers this interpretation a travesty, and holds that "passive movement" is essentially one in which force has no part, and that it can only be performed when the patient's muscles are in a state of complete voluntary relaxation. The patient must offer no assistance or resistance, and the movement must be performed painlessly, otherwise reflex muscular contraction will offer opposition. Should this occur, the impediment to movement offered by the patient's muscles cannot be overcome by "passive movement." The movement becomes at once a "forced movement." Manipulation finds no place among "active movements," because muscular relaxation is essential to it, just as it is to the "passive movement" just mentioned. Therefore, as a means of opening the discussion, I would submit that a definition of "manipulation" is the act of moving a joint so that an impediment to movement is overcome and mobility is restored.

* Read in opening a discussion in the Section of Physical Medicine at the Centenary Meeting of the British Medical Association, London, 1932.

The second point for discussion arises from the first. "Is it necessary to add a fourth method of treatment to the list of those at the disposal of the physical therapist?" In other words, "Is joint manipulation an art with a special technique, and, in order to obtain proficiency in the art, is there any call for special training and study?" The answer is found in the writings of Wharton Hood, who reports that Hutton, the most famous "bonesetter" of his time, gave as the secret of his successful treatment the slogan: "The twist is the thing." The essential nature of this "twist" was only appreciated by me after years of close study, experiment, and research. The main manœuvre in this "twist" involves, with each joint, putting it through those movements which are not under voluntary control before attempting to perform those that are under control. As far as I know, the hip-joint is the only one at which all possible movements are under voluntary control.

## ILLUSTRATION OF TECHNIQUE

To establish the point, the manipulative technique of one joint may be considered in detail—for example, that of a metacarpo-phalangeal joint of the hand.

The most valuable manipulative movement is tension, whereby the joint surfaces are pulled apart. The manipulator grips the finger with what is known as "the golf-club grip" with one hand, and exerts tension with the other. (The manipulative technique for all joints of the extremities is for one hand to stabilize while the other mobilizes.) Then, with the metacarpal fixed with one hand, the base of the phalanx is moved in an antero-posterior direction on the head of the metacarpal. (A slight degree of flexion is essential.) These two movements, being free from leverage, may be performed with all the strength of which the manipulator is capable. It must then be ascertained that the lateral ligaments are free to allow the movement of the phalanx, and so each is stretched to the full extent. This lateral movement is not one of adduction and abduction, any more than the antero-posterior movement is one of flexion and extension. The aim is to press one side of the phalanx down on the head of the metacarpal, while the other is pulled away from it. Rotation of the phalanx on the metacarpal must be freed, and this is achieved by flexing the distal joints so as to form a hook. The "hook" is then grasped and rotated, first in one direction, then in the other. The two movements of freeing the lateral ligaments and of securing rotation are performed with leverage, and therefore any undue exertion of force will do incalculable harm. This is the reverse of what held good for the two previous movements.

Finally, the movements under voluntary control are reached—namely, flexion and extension, adduction and abduction. It must be remembered that the metacarpo-phalangeal joint is a sliding joint rather than a hinge joint. The base of the phalanx slides round the head of the metacarpal, with the metacarpal origin of the lateral ligament acting as centre and the ligament to the phalangeal insertion acting as radius, to describe a circle. In order to perform flexion without causing damage to any other structure the manipulator must fix the metacarpal head with one thumb and press the base of the phalanx directly forward with the other. If the phalanx is free to move at all it will glide round the head of the metacarpal, and flexion will take place.

If, for some reason, the phalanx is not free to slide round, and movement is performed as if the joint were a hinge joint, then the lateral ligament and the posterior part of the capsule are severely strained, if not even actually ruptured; and the tendons of the interossei may be torn.

All this shows the definite and complicated technique needful for the mobilization of a finger-joint. Every joint in the body calls for similar consideration, and a special technique is essential. We are, therefore, as it seems to me, justified in claiming that the art of manipulation has a special technique, and that special study and training are necessary to practise it. Also a fourth method of treatment should be added to the list of those available to the physical therapist.

### The Scope of Manipulation

The next point that arises is: "Should the art of manipulation be taught in our medical schools?" The question depends on the answer to another question: "Can benefit be conveyed to our patients by manipulation?"—as, if so, surely it ought to be taught.

It is well, for the purpose of discussion, to divide the joints of the body into two sections: those of the extremities and those connected with the spinal column. At the same time it must be remembered that, wherever situated, a joint remains a joint, and as such is subject to similarity of all pathological conditions. This fact is often overlooked. Synovitis of a knee-joint as a result of injury is a common diagnosis, yet few clinicians seem to consider the possibility of a similar diagnosis in an intervertebral joint in the event of injury to the back.

It is usually admitted that manipulation of the joints of the extremities affords a chance of restoring movement if the full range is demonstrably lost. The manipulation may be successful if:

1. Active pathological processes have ceased and are quiescent.
2. The limitation of movement is due to adhesions.
3. The limitation of movement is due to a locking of two joint surfaces upon one another.
4. The manipulation is performed with a skill that will lay no undue strain on any normal structure, whether an intrinsic part of the joint or not.

The first of these essentials rests with diagnosis, a far from simple matter, and one which always calls for a minute examination of the joint, and often for a wide experience. The second and fourth essentials can be accepted without difficulty. The third raises points which might possibly cause the discussion to be acrimonious. There is a theory held by many that a joint is dislocated if displaced, and that if it is not displaced any loss of mobility must be due to adhesions only. Experiences in everyday life should teach that this view is untenable. Most people have felt a sudden stab of pain in a joint if their strength is exerted to the uttermost when attempting to perform a movement just beyond their power or their reach. They check the movement at once, and, if possible, shake the part involved rather vigorously. If the back is the site of the pain, they will probably wriggle the trunk. Relief is often instantaneous. At some joints, however, this relief cannot be attained voluntarily, as the joint may not be accessible. It is then that manipulation becomes necessary. For instance, a finger can be pulled and a wrist shaken or squeezed by the patient himself, but other joints—for example, those at the base of the second metatarsal—may call for skilled manipulation before relief can be secured.

The only possible explanation seems to be that the joint surfaces have "seized up"—to use an engineering expression—and are freed by the subsequent manipulation. Experience teaches that some joints are more readily subject to this than others—for example, the joint between the proximal and distal row of carpal bones. (This is one common form of "tennis-wrist," which can be remedied instantaneously by manipulation.) The shoulder-joint invariably escapes, but the head of the humerus may instead drop downwards unduly in the glenoid, or it may tend to retain a position too far forward in the glenoid. Should this happen disability will ensue. If the head has dropped downwards there will be pain when any movement is attempted, and sometimes even without movement, and this trouble is one of the common causes of a so-called "brachial neuritis." Abduction and forward flexion become restricted if the head of the humerus does not slip backwards and downwards correctly on the surface of the glenoid, as the upper end of the humerus then impinges on the under surface of the acromion and nips the synovial surfaces there. This explains why the most important point in manipulation of the shoulder is to press the head of the humerus backwards in the glenoid. It also shows how manipulation can have disastrous sequels if this precaution is disregarded.

### Importance of Minor Damage

If "locking" and other minor lesions can take place within a joint, can they serve as a fertile source of trouble? Can any treatment other than manipulation prove equally efficacious as a remedy?

If a "lesion" of the type we are considering exists we should anticipate that there will be pain and restriction of movement. By manipulation we should, presumably, be able to restore the normal range of movement. Relief from the pain within the joint, whether it was constant or only present on movement, should also follow this restoration as a natural sequence. This hardly calls for discussion, and it should only be necessary to point out that there will be increase rather than decrease of symptoms if the dose of manipulation is excessive, if it is unskilled, or if it is performed in the presence of active infection.

There is often a tendency to overlook the fact that any trouble within a joint is liable to cause serious interference with the joint-sense, and therefore with co-ordination of muscle movement. This is demonstrated in cases of pain in the joint at the base of a metatarsal, which may lead to a limp and most ungainly gait, and so upset the co-ordinated movement of most of the joints of the body. Apart from the remote effect, the evil of the disturbance of joint-sense must be borne in mind, though the importance of the defect varies with different joints.

The importance of dealing with minor lesions within a joint from the point of view of the future of the joint is also a point worthy of consideration. I suggest that any lesion of any joint adds, as it were, to the age of the joint, and so serves as a factor predisposing to the onset of the changes usually associated with advancing years. Expressed colloquially, this means that any joint lesion tends to "wear out" the joint, and the expectation of healthy life within the joint is reduced. The reduction depends on the severity and duration of the "lesion."

### Joint Lesions and Remote Effects

We now come to one great controversial point—the extent to which we ought to express to our medical colleagues the conviction that remote effects are associated with joint lesions. This can be considered under four headings:

1. Pain referred elsewhere than to the joint.
2. Remote effects from the pain.
3. Effects in relation to the joints of the extremities.
4. Effects in relation to the joints of the spinal column.

Arthritis of the shoulder, or adhesions within the shoulder-joint, may cause widespread pain and aching throughout the upper extremity. This pain is often erroneously attributed to neuritis, and the symptoms are similar to those caused by the dropping of the head of the humerus downwards in the glenoid (as previously mentioned). This trouble is often encountered after the prolonged wearing of a sling if the olecranon has not been supported.

A patient with a painful wrist will often complain of pain "shooting right up the arm" on certain movements, while one suffering from a form of "tennis-arm" involving one of the radio-ulnar joints may feel referred pain in the other. It is now widely, though unfortunately not universally, accepted that a common form of pseudo-sciatica owes its origin to a lesion of the sacro-iliac joint, and it is common knowledge that pain in the

knee may be referred entirely from arthritis of the hip. It should be safe to presume that pain may be referred from lesions of joints in other situations. This opens up a very wide view of the possible origin of many obscure aches and pains. Thus, assuming the presumption to be correct, we find at once a possible explanation of the origin of occipital pain. It can be referred along the great occipital nerve as the result of irritation within a joint high up in the cervical region. It might be referred along one of the branches of the superficial cervical plexus, if the next sections of the spinal column are involved—a common cause of auriculo-temporal "neuralgia." If the irritation is lower down in the joints of the spine the pain may be referred along any of the nerve trunks that go to form the brachial plexus, and if lower still the intercostal nerves are involved.

### The Spinal Column

Here we also reach the area of the costo-vertebral joints, and movements of these joints are of a most complicated nature. Any lack of co-ordination in the pull of the extrinsic muscles of respiration may lay undue strain on one of these joints and cause a locking. This is a little recognized, though real, cause of pleurodynia—purely traumatic in origin. A most undue strain must also be placed on these joints after fracture of the ribs. The result must be that, as with joint strain in other situations, a traumatic arthritis is established, a reflex immobilization is enforced, and adhesions form. This is a logical explanation of the persistence of the pain and disability after these injuries, and it follows that it can only be relieved by treatment similar to that prescribed for the injury should it occur within a knee or shoulder—namely, manipulation. The manipulative treatment of a traumatic pleurodynia offers an excellent example of the "five-minute miracle cure."

As we proceed lower still we find a possible cause of pain, not only in the lower part of the back, but also in any of the various plexuses throughout their wide distribution.

Variations at the lumbo-sacral junction are so numerous that it is impossible to standardize the normal limit, but certainly a completely sacralized transverse process of the fifth lumbar vertebra must be placed outside it. It is said that this and similar conditions cause no symptoms. This is true in many instances, yet I have seen an *x*-ray photograph showing a definite arthritic change in the false joint between a sacralized transverse process and the ala of the sacrum. This should indicate the possibility of pain being referred to this point.

I have given an account elsewhere[1] of the rare chance afforded me to examine post mortem a case in which persistent pain had followed accident. There was a greatly enlarged transverse process of the fifth lumbar vertebra on one side, and the proof seemed incontrovertible that this was the cause of the man's pain and disability. He had been a good and active general labourer all his life till the time of the accident. After that it was plainly impossible for him to work at all with the condition present as shown at the time of death. Even a minute degree of rotation with the spine extended caused a nipping of the soft structures between the transverse process and the sacrum. Prior to the accident the ligaments had without doubt limited movement, and nipping was impossible; but, as a direct result of the injury, there was a relative increase in mobility, which permitted this incapacitating nipping to take place.

It should then be possible, if other opinions coincide with mine, to reverse the old dictum that an enlarged or sacralized transverse process of the fifth lumbar vertebra is of no diagnostic importance, and to proclaim it as a potential cause of trouble after accident. It should also throw light in a dark corner of manipulative work, and disclose a reason for possible disappointment in a case which otherwise might appear favourable for manipulation. If this condition is present, injudicious handling will inevitably increase any symptoms, but the risk is obviated if the manipulation is performed with the pelvis flexed on the trunk. This limits the scope of the manipulation, but if the precaution is ignored disaster will follow.

[1] *Backache.* J. and A. Churchill.

### The "Wonderful Cure"

Manipulation as a possible means of relieving symptoms other than pain is ground full of pitfalls and danger. The worst danger is erroneous diagnosis. Pain in the right iliac fossa, for example, may be due to sensitiveness of the ligaments on the anterior aspect of the sacro-iliac joint. Should the tension on these ligaments be relieved by manipulation, the pain will disappear, and the patient will broadcast the wonderful "cure," of what had been diagnosed elsewhere as "chronic appendicitis." In this case the pain has been cured, but not the "appendicitis," as this did not in fact exist.

The confirmed believer in osteopathy will fly to an osteopath for everything, even if her child may be suffering from such a complaint as German measles, and—*mirabile dictu*—recovery takes place rapidly. Nothing will convince this mother that the recovery follows manipulation in spite of the treatment and not because of it. This applies to many other so-called "cures." It is amazing, as well as humiliating, to reflect that any treatment has to be excessively bad before it will interfere with the wonderful recuperative power of Nature. Healing and cure are the works of Nature. It is sometimes within our power to assist Nature and hasten recovery, or even to render recovery possible by removing influences that might retard or prevent it; but restoration of function is nothing else than release of natural processes from disabling interference. To review manipulation in this light there can be no doubt that it can, in suitable cases, be successful in removing, or providing a remedy for, the disabling interference.

A child labelled "kyphosis" may be sent to the physical treatment department at hospital, and after a few weeks the mother will report that it "has lost that dreadful cough." The "dreadful cough" will always prove to have been of the asthmatic type. This suggests that the immobility of the joints of the thoracic spine may have been the cause of the irritation of the sympathetic which gave rise to the cough, and that restoration of mobility removed the source of irritation. It puts within the bounds of possibility the common claim of the osteopath that at least one of the varieties of asthma can be remedied by manipulation. It also shows that the irritation and severity of symptoms can be reduced even when more definite "cure" cannot be attained.

Occipital neuralgia may be referred from a lesion of the cervical spine. When severe it may be associated with a feeling of nausea akin to migraine. This pseudo-migraine can be cured or alleviated, and the frequency of the attacks reduced by manipulation. The degree of benefit derived is directly proportionate to the degree of pseudo-migraine superadded to a true migraine.

A spasmodic torticollis is sometimes due to irritation within one or more of the joints of the cervical spine, and may be amenable to manipulative treatment, particularly if the complaint started as a direct sequel to accident. I have seen one case in which spasm of the diaphragm was associated with a sudden loss of mobility of the third cervical vertebra. The occurrences were simultaneous during sleep, and the spasm was relieved as soon as mobility was restored by means of suspension.

### Pitfalls and Errors in Diagnosis

Pain may radiate along the intercostal nerves round the chest wall, not only from a lesion in the costo-vertebral joints, but also as the result of disordered mobility in one of the interverbral joints. Should this "lesion" exist at a level at which the corresponding intercostal nerve passes underneath the breast, pressure on the breast will mean pressure on the chest wall, and will cause pain. It frequently happens that this pain in the chest wall is confused with pain in the breast itself, and may be diagnosed as being due to chronic mastitis. It may even be hinted that operation is essential lest the "mastitis" should prove to be a pre-cancerous condition. The victim who is cured by manipulation of this pain in the chest wall is convinced, not unnaturally, that she has been cured of mastitis, and even, perhaps, saved from cancer. Actually the mastitis did not exist; or, if it existed, caused no symptoms. The intercostal distribution, lower down, passes over the front of the abdomen, and frequently pain referred along one of the nerves which supply the abdominal wall is mistaken for pain within the abdomen. If the symptoms are derived from one of the nerve trunks that supply the area over the stomach they may be attributed to indigestion. The conviction may be strengthened by a practitioner's diagnosis of dyspepsia. The usual medicinal and dietetic remedies are tried, but the pain persists. In despair the patient may seek relief by manipulation, and will receive it. Thus we have another "wonderful cure of indigestion." Had the initial diagnosis been correct, manipulation would have been the first principle, and not a last, when prescribing measures to relieve the symptoms.

Relief from pain on the opposite side, which may quite easily, but wrongly, have been attributed to the gall-bladder, may add to the number of patients who are alleged to have been cured of gall-stones by means of manipulation.

The immense reputation gained by unqualified practitioners for their power to cure a variety of ailments by manipulation is thus largely attributable to errors in diagnosis by members of our own profession. The prolonged administration of internal remedies designed for the relief of dyspepsia and gall-bladder troubles (to quote but two common examples), in cases where such troubles do not exist, especially if irritants are used in the form of aperients, can only present potentialities for definite harm. The fact of leaving off the remedies may lead to an improvement, which is then placed to the credit of manipulation.

The discussion which follows should show the answer to a very important question. "Should our fellow practitioners be encouraged to consider the possibilities of pain being referred along a nerve trunk, or via the sympathetic, in all doubtful cases, or in cases where ordinary medical treatment has failed?" Also, it should help us to answer two other questions: "Should the coming generation—that is, students in medical schools—be drilled to accept the possibility that pain can be referred from a proximal source of irritation to any point along the distribution of a nerve or its sympathetic connexions?" "Should they be taught the importance of examination of the spinal articulations in complex cases, and should they be instructed in the special art of examination of the spinal movements, and in the correction of any discovered defects?"

### Unexplored Fields

I do not propose to enter into the wider possibilities of the effects of manipulation, as the subject is too difficult and obscure. My knowledge, and perhaps my skill as a manipulator, is inadequate for the task. There are, however, facts which provide material which should make us furiously to think. For instance, "What is the meaning of the paralytic ileus which is so frequent a sequel to severe injury of the chest wall or to fracture of the ribs?" It is commonly considered to be due to over-stimulation of the sympathetic. There is a possibility that irritation of less severity at any level throughout the spine might produce symptoms less grave, and that the irritation may be caused by a joint lesion and so be amenable to manipulative treatment. What other explanation is there for the fact that so many patients volunteer the information that manipulative treatment has been efficacious in relieving constipation, or in correcting menstrual irregularities, or in reducing flatulence? Sometimes patients experience a sensation of warmth and well-being in a part that hitherto has felt cold and lifeless. These effects of manipulation of the joints of the spine are too common to be merely accidental, or the result of individual idiosyncrasies. We open up a wide field of possibility if manipulation of the spinal joints can influence some of the manifold ramifications of the splanchnic sympathetic system, by relieving some source of local irritation. The same can be said in relation to the other sympathetic nerve ganglia.

Possibly we do not always honestly try to sift the truth from the claims made on behalf of manipulation. Our minds are perhaps warped with prejudice, and we are apt to dismiss the story told by patients with a sneer, which almost amounts to a thinly veiled insult to their intelligence. Their claims are based on personal experience, and there may be some hidden truth yet to be revealed when study of the sympathetic nervous system has advanced far enough to include the effect of irritation of the sympathetic nerve supply to the joints on other ramifications of the sympathetic nervous system. Perchance one of a future generation may read what has been said to-day, and, with a full knowledge, marvel at our ignorance.

We, as physical therapists, are only sowers of a seed; it is for us to work with such knowledge as we possess, leaving to others the completion of the work we have begun. Prejudice and wilful blindness to facts will lead us nowhere. We may at present have no explanation for certain facts, yet let us remember that bitter bark was used universally in the treatment of malaria long before anyone had thought of quinine, and before the malarial parasite had been isolated. Twenty years ago joint manipulation in the extremities was wellnigh anathema, yet now it is recognized as a legitimate branch of medical practice. Possibly another twenty years will see general recognition of the therapeutic value of manipulation of the joints of the spine.

Physical therapists are bound to realize more than their colleagues in other branches of the profession the truth of the fact that "God helps those who help themselves," and we must still be willing to "scorn delights and live laborious days" of patient study and hopeful research if we are finally to achieve full knowledge of all the possibilities that physical treatment may yield. We are only doing our duty if, when we hear of a new claim put forward for manipulation, we receive it with doubt until the claim has been tested and failed to be found wanting either in reason or fact. But "blind unbelief," which will not listen, reason, or inquire, is nothing more than pigheadedness. As long as we continue to refuse to our patients the treatment by which they can receive relief at the hands of others, so long shall we play into the hands of the unqualified practitioner.

# THE ROLE OF ELECTRICITY IN TREATMENT *

BY

E. P. CUMBERBATCH, B.M.OXON., D.M.R.E.CAMB., M.R.C.P.

MEDICAL OFFICER IN CHARGE OF THE ELECTRICAL DEPARTMENT, ST. BARTHOLOMEW'S HOSPITAL

Various diseases can be cured or relieved, not only by electricity, but also by other physical agents or by pharmacological or surgical methods. When we speak of the role of electricity we should exclude the maladies which respond to simple forms of treatment.

## INTRODUCTION

Electrotherapy is a specialty requiring for its proper performance an adequate training, much experience, and the possession of costly apparatus. For these reasons the fees which have to be charged are higher than those demanded for simpler methods of treatment. Thus, when we try to decide its role we should be thinking of the diseases in which electricity produces *quicker* or *better* results than other therapeutic agents, or those in which it succeeds after simpler measures have failed. It may be possible in the future to compile a list of these diseases. At the present time it is very difficult to give the names of even a few diseases in which there is general agreement that electricity is the best form of treatment.

I therefore feel that it would be better, on the present occasion, not to state the diseases for which we believe electrical treatment to be the best, but rather to discuss the ways in which electricity acts in rectifying pathological conditions. We may then be able to contrast them with the modes of action of other therapeutic agents, and say why we regard electrical treatment the best for this, that, or the other disease.

In suggesting a discussion along these lines I am not forgetting that the value of any form of treatment is assessed by the results that are obtained in clinical practice, and not by the findings of the physiological laboratory or by theoretical discussion. But the conditions which prevail at the present day in many of the hospitals render it difficult to procure a supply of clinical material, apart from the derelict stuff which usually finds its way to the electrical department. Even if the specialist had access to patients who had not yet been treated, except by the simplest methods, the task would be slow and arduous, requiring accurate diagnosis, a large number of patients, expert treatment, careful scrutiny of results, and a follow-up. Under present conditions there is yet another difficulty. Of the patients who are suffering from the same kind of complaint some may be referred to one department, some to another, and the same disease will be treated by different methods. The specialist in charge will make out a case for the method of treatment which is conducted in his own department. It is evident, then, that the task before us to-day is one of no ordinary difficulty.

In the preface to the sixth edition of his work on medical electricity, published in 1913, the late Dr. Lewis Jones wrote the following: "Whereas, in the past, there has been much uncertainty as to the modes of action of electricity in the body, we may now take our stand on firmer foundations, and may recognize that electrical applications act either by the chemical (ionic) effects which they produce, or by their thermal effects." This teaching lightened the darkness that had existed up to the beginning of this century, and enabled electrotherapy to commence its progress along rational lines.

* Read in opening a discussion in the Section of Physical Medicine at the Centenary Meeting of the British Medical Association, London, 1932.

## THERMOTHERAPY

The chemical and physical changes that are induced in the tissues by electricity are followed by biological changes. Much is known of the nature of the chemical and physical changes—much remains to be discovered in regard to the biological changes, and the more we know of them, not only in diseased but also in healthy tissue, the more precisely shall we be able to assess the value and ascertain the role of electricity in therapeutics.

It is agreed by most workers that the therapeutic effects that follow treatment by high-frequency currents are due to that. High-frequency therapy, in fact, is thermotherapy. The heat is produced either in or on the body. The rise of temperature in consequence of the heat may not be high enough to damage the tissues. On the other hand, it may be sufficient to deprive them of life. There are various ways of utilizing high-frequency currents in the treatment of disease. They differ both in the distribution and in the degree of the heat, and I would suggest their inclusion under the title "the electro-thermic methods of medicine and surgery," restricting the name "high frequency" for the kind of current utilized.

The most widely employed of these methods is that in which the current is passed through the tissues for the purpose of raising their temperature *en masse*—that is, for producing diathermy. Since the heat, which is derived, "ready-made" as it were, from external sources, can raise the temperature of the deep-lying tissues, I think we may say that the role of electricity in thermotherapy is to heat the tissues which lie beyond the reach of heat derived from other sources.

### *Biological Effects*

Certain important matters now arise for discussion. The first is the distribution of the heat generated by the diathermy current. It is commonly supposed that the current heats the tissues between the electrodes "through and through." But I do not think that there is more than the slightest rise of temperature in the vascular organs of the trunk when both electrodes are placed on the exterior. If anyone doubts this let him place a thermometer with its bulb in the posterior fornix vaginae, and pass a diathermy current through the pelvis by way of electrodes placed on the outside. Let him pass the current and increase its strength until the temperature of the skin reaches 114° F. For many minutes the thermometer will show no rise of temperature within the pelvis. There may be a rise of a fraction of a degree after a twenty-minute session. The resistance of the vascular organs of the pelvis is much lower than that of the skin and superficial fascia, and the current will heat these organs much less than the other parts. Further, most of the heat will be carried away by the blood stream.

When high temperatures are desired in the vascular organs of the trunk it is necessary to place one of the electrodes in close proximity to them. This is possible in the case of the pelvic organs, because there are channels that lead into the pelvic cavity, but it is impossible in the case of the abdominal or thoracic organs. How comes it, then, that we are able to relieve the severe pain that is felt in cases of angina pectoris by diathermy? Electrodes are placed over the praecordium and on the back of the chest, and there is reliable clinical evidence to show the value of diathermy in these cases. The problem is for the physiologist and pathologist to solve.

### *Nature of Changes*

Having expressed the general belief, then, that the biological changes that follow the passage of high-frequency currents through the tissues are caused by heat, there remains the question of the nature of these changes.

Vaso-dilatation and acceleration of the blood flow occur. But what else? The pathologist may explain why heating, say, the infected cervix, for the very short period of ten minutes as infrequently as twice a week, can free the part of organisms—not only the gonococcus, but the *Streptococcus faecalis*, for which the lethal temperature is much higher.

What I have in my mind, however, is the influence of diathermy on the endocrine function of the ovary. The troubles that may arise at the time of the climacteric, such as arthritis, hyperpiesia, etc., when the ovarian functions are in a state of imbalance, can generally be put right by pelvic diathermy. There is strong evidence to show that the therapeutic results are due to the action of the diathermy on the ovaries. Dr. C. A. Robinson has been conducting pioneer work on diathermy in gynaecology for many years, and his experience is large and unique. I feel that his work has opened out a new era in gynaecology.

Just one more matter for comment. Can the biological effects of high-frequency currents be attributed to any change in the tissues other than the production of heat? For the purpose of teaching students I have adopted the pragmatic view, and I tell them that they must look upon diathermotherapy as a form of heat treatment. But do not regard me as destitute of imagination. Most of you are aware of the sad story of high-frequency treatment in France: how it was introduced by Professor D'Arsonval; how the *grand mâitre* observed the heating of the tissues but did not realize its importance; how the French electrotherapists used high-frequency generators that were incapable of producing much heat, and could not explain the mode of action of the currents; how high-frequency treatment was banished from France, only to return a few years later, its past life forgotten, and with a determination to start afresh under the name diathermotherapy. Quite recently there has appeared a book, *Les Ondes Hertziennes Courtes en Thérapeutique*, by Saidman and Cahen. The tissues can be heated when the body is placed in the field of the waves and diathermy is produced. The authors speak of a "quasi-specific" analgesic action of the waves. Is this a rumble of the distant thunder of the departing storm of controversy on the action of high-frequency currents? Or does it indicate the approach of a fresh storm?

### Surgical Uses of High Frequency

The task of deciding the role of high-frequency currents in surgery is much less difficult than it is in medicine. Compared with medicine, surgery is more an art and less a science. The most recent of the surgical electrothermic methods is that in which the cutting arc takes the place of the scalpel. The sharp edge of the scalpel cuts the tissues in front of it. The arc, in addition, coagulates the divided surfaces. The depth to which the coagulation proceeds is largely under the control of the operator. It is obvious, then, that scalpel surgery is more exact. On the other hand, the arc seals the microscopic vessels when it severs them, and at the same time kills any bacteria or malignant cells in its path. These advantages are great when operations are conducted on infected or malignant tissue. Healing by primary union will likewise occur after the arc operation. A survey of recent surgical literature on the new surgery, and a perusal of the results achieved in cases of malignant growths, vascular tumours of the meninges, etc., shows the important role of the cutting current in surgery.

There are, in addition, other ways of utilizing electrically produced heat for surgical purposes. In one the heat is distributed through the part to be destroyed, and the temperature is raised until the tissue is coagulated *en masse*. The actual cautery cannot bring about this diathermic coagulation: it produces too high a temperature in contact with the hot metal, and too low a temperature to coagulate the tissue a little distance away. By the electrical method and the production of diathermic coagulation the tissue is killed *en masse*, in addition, the microscopic vessels are sealed and infection is brought to an end.

There is the third electrothermic method of surgery—one which is of high value in cases which do not go to the surgeon. I refer to the method originally termed "fulguration"; a more descriptive term, however, is desiccation. In this method the abnormal or unnecessary tissue is killed by directing sparks upon it. The electrically produced heat deprives the tissue of its water: in other words, it dries or desiccates it. When tissue is killed in this way the inflammatory reaction is surprisingly small; it is almost negligible. Further, the scar that is left is better than that obtained by any other means. It is soft, smooth, supple, and does not contract. One which I have kept under observation over a period of twelve years is as good as it was when it first appeared. Electro-desiccation certainly has an important role in cosmetic work.

### Galvanic Current

Let us now consider the galvanic current and its role in treatment. What can it do, and what can it do better than can other therapeutic agents? It can produce chemical caustics in the body, and these can be used for the destructive treatment of abnormal tissue. Treatment by electrically produced caustics is superior to treatment by ready-made caustics in the following respects. The former can be produced within the tissues, the quantity made is under the precise control of the operator, the reaction is slight, and the cosmetic results excellent. The method, of course, has its limitations—only a very small amount of tissue can be destroyed at each application. But whoever the specialist is, and whatever his speciality, be he enthusiast or nihilist, I believe there is at any rate one abnormal condition in which he will admit that electricity has a role. I refer to hypertrichosis. But there are other maladies in which electrochemical cauterization is a more elegant method than the use of ready-made caustics or the actual cautery—for example, stellate veins, telangiectases, simple papillomata of the skin, pedunculated warts, etc.

#### *Ionization*

There are various ways of introducing medicinal substances into the skin. The galvanic current is one of them. Since Professor Leduc introduced this form of treatment—ionization—at the beginning of the present century, there have been many hot discussions on the subject. It is now generally agreed that ions cannot be made to migrate more than a slight distance below the surface. But no method equals the galvanic when the operator desires to introduce ions into the skin, the accessible mucous membranes, the base of an ulcer, or the wall of a sinus. Within the range to which they can immigrate the ions may almost be said to saturate the tissue. Compare this with the almost imperceptible depth to which the ions pass by the process of diffusion, when lotions or irrigating fluids are brought into contact with the surface. We may say, then, that the galvanic current is indicated when one desires to introduce therapeutic ions into the superficial tissues to a depth beyond that which they can reach by diffusion. Compare the effects of irrigating the ear in a case of chronic suppurative otitis media with those following the immigation of zinc ions. Compare the results of packing the canal of the cervix uteri with antiseptics with those that follow the introduction of zinc ions.

The galvanic current possesses another therapeutic property, and I believe it to be of considerable value. I refer to its power to aid resolution of inflammation when progress by natural methods is stayed. This has been known since the middle of last century. I have in my possession a paper which was written by Leduc before he published his work on ionization. In this paper he describes the value of the galvanic current for the purpose I have just mentioned. It did not seem to attract much attention. But when the distinguished author made his investigations on ionization the attention of the profession was directed on the pharmacological properties of the ions rather than on the other actions of the current. Leduc's work on ionization came like a kindly light to lead us through the encircling gloom of galvanotherapy as it existed at the time. But we shall not be through the gloom until we know the action and method of action of galvanic current on the deep as well as on the superficial tissues. Fortunately, some clinical investigation on this matter has been made in recent times. During the past few years it has been the custom at the Miller Hospital to employ anodal galvanism in cases of Colles's fractures when there is undue pain and swelling. The treatment quickly relieves the pain, and the swelling subsides. Dr. C. B. Heald has had considerable experience on the use of anodal galvanism in cases of trauma.

### The Sinusoidal Current

Before concluding I would like to say something—and ask something—about another current which has valuable therapeutic properties. I refer to the sinusoidal alternating current. It is potent in relieving pain in the later stages of neuritis. It is of high value in the treatment of the results of anterior poliomyelitis. It is not to be expected that the profession as a whole will consider these claims unless the method of action of the current is rationally explained. This explanation is still wanted. In the days when Lewis Jones was in charge of the electrical department of St. Bartholomew's Hospital, a very large number of cases of infantile paralysis were treated by sinusoidal current baths. Lewis Jones was the greatest English authority of his time on electrotherapy. In addition, he was a first-class neurologist. He had the highest opinion of the value of the sinusoidal current in the disease under consideration. Yet to-day we get scarcely a single case for treatment in the department. Perhaps a change will come when we know more of the method of action of the current. The study of the effects of stimulation of the skin and its afferent nerve endings, not only by the sinusoidal current, but also by other electrical methods, such as the brush discharge, and the influence of this stimulation on the arterioles and the ductless glands, may well lead to findings of importance in the treatment of disease.

### Conclusion

Finally, in discussing the immediate effects of electricity on the tissues rather than the therapeutic results that are brought about, I would say that the role of electricity in the treatment of disease is the following:

1. To heat tissues which are beyond the reach of ready-made heat applied to the surface, with the object of procuring (*a*) the medical effects of heat, (*b*) the destructive effects, and, at the same time, the sealing of the microscopic vessels and the abolition of infection.

2. To cut tissue for surgical purposes, and at the same time seal the severed vessels.

3. To kill tissue by drying it, thereby causing a minimal reaction and producing the best possible scars.

4. To bring about the entry of therapeutic ions into the superficial tissues to a depth beyond the range of penetration by diffusion.

5. To kill tissue by producing chemical caustics within it.

6. Keeping in mind one of the physiological effects that electricity can bring about, we might add to the list: to procure vaso-dilatation and acceleration of the blood supply, and (probably in this way) to aid the resolution of inflammation.

## THE TREATMENT OF PERNICIOUS ANAEMIA WITH FISH-LIVER EXTRACT

BY

L. S. P. DAVIDSON, B.A.Camb., M.D., F.R.C.P.Ed.

REGIUS PROFESSOR OF MEDICINE, UNIVERSITY OF ABERDEEN.

The investigations of Whipple and Robscheit-Robbins[1] into the relative value of different foodstuffs in the treatment of experimental haemorrhagic anaemia in dogs clearly showed that certain glandular organs—namely, the liver and kidney—possess remarkable powers of stimulating the regeneration of haemoglobin. These physiological studies may be said to have been the main factor which induced Minot and Murphy[2] to apply dietetotherapy in the treatment of pernicious anaemia. The historical aspects of this subject have been adequately reviewed by many authors,[3] and little more need be said except to draw attention to the statement of Whipple and Robscheit-Robbins that, although mammalian liver has extraordinary haemopoietic activity, fish liver is inactive. It has seemed to me that this might depend on insufficient dosage due to the nausea and lack of appetite engendered by the unpalatable nature of the material, or to gastro-intestinal disturbances secondary to the irritating effects of excessive amounts of fatty acids produced from the oil. Such factors might reduce the intake or lower the assimilation and absorption of the anti-anaemic material contained in fish liver. The rise in the cost of fresh mammalian liver from fourpence per pound in pre-war days to its present price of one shilling and the expense of liver extract, have made it extremely difficult for any but the well-to-do to face the financial strain which must be borne for the rest of his life by a patient with pernicious anaemia. The production of a cheap but potent liver extract is an economic problem of great importance, and one on which I have been concentrating for a long time. My appointment to the Chair of Medicine in a university town, the principal industry of which is the fish trade, gave me the desired opportunity of investigating the haemopoietic properties of fish liver.

After consultation with Professor J. J. R. Macleod, it was decided to approach Mr. Adrian Lumley, Director of the Scientific and Industrial Research Station, Torry, Aberdeen, and enlist his help. Mr. Lumley immediately appreciated the possible benefits which might accrue to the fishing industry if an active haemopoietic factor should be demonstrated in fish liver, and not only agreed to supply the material to us, but placed at our disposal the services of Dr. Lovern and Mr. Sharp to carry out any chemical investigations that might be required. I desire to record my thanks to the directors and the members of the staff of the Scientific and Industrial Research Station, Torry, Aberdeen, for their co-operation and help, which enabled this investigation to be brought to a satisfactory conclusion.

### Investigation I

Before attempting to prepare an extract, it was decided to try the effects of feeding raw liver after removal of the main mass of oil. The livers were frozen solid, minced into small particles, and placed in large centrifuge tubes.

On thawing, the oil began to separate rapidly, and after centrifugalization for one hour the material had separated into four layers. The top layer, which was approximately 50 per cent. in volume of the total bulk, consisted of a clear oil which varied in colour from a pale straw to a dark yellow, depending mainly on the variety of fish liver used. The remaining layers consisted of: (1) an interface layer of tissue, protein, etc.; (2) an aqueous layer which was of a sanguineous material; and (3) a mat of more dense liver tissue. The contents were then frozen solid in the centrifuge tube and removed *en bloc*. The oil layer was cut off and discarded, since all recent investigations have shown that the anti-anaemic factor is derived from protein, and is not related to fat or to the vitamins which are known to the present in fish-liver oil. At first it was decided to test the relative potency of each of the remaining layers, but the difficulty of obtaining a sufficient number of cases of pernicious anaemia precluded this; so they were mixed together, forming a material of a semi-solid consistence with a taste and colour not unlike thick anchovy sauce. The quantity administered daily was the residue remaining from one pound of fish liver after removal of the oil. Since fish liver contains from 40 to 70 per cent. of oil, it was reckoned that one pound of untreated liver should be considered as comparable to half a pound of fresh mammalian liver.

The material was placed between layers of bread and butter and fed to two patients suffering from pernicious anaemia, but before any response could have been reasonably expected to occur the treatment had to be stopped, partly because of the nausea and disgust which the material produced, and partly because it rapidly underwent putrefaction, even when kept in the ice-box. I am informed that putrefactive organisms from fish can survive at a temperature of −10° C. and even lower.

### Investigation II

To guard against putrefaction and also to reduce the bulk, the livers were treated with acetone, which removed both water and oil. The dried and powdered residue, however, was still very bulky and unpleasant to take. A dose equivalent to half a pound of liver per day induced nausea and vomiting in a patient on whom the material was tried.

### Investigation III

The method finally adopted was based in part on the work of Cohn and others.[4] It was first carried out on a laboratory scale. With the apparatus available it took at least twenty-four hours to obtain the extract from two pounds of fish liver, and, as this was the amount required for the treatment of one patient for one day, it was only possible to continue treatment for a period sufficiently long to indicate a definite response. Fortunately, in pernicious anaemia such a result can usually be obtained in seven days, and a failure to respond within fourteen days indicates in the vast majority of cases either a wrong diagnosis or the use of an impotent preparation.

The excellent results reported under Cases 1 and 2 encouraged us to ask for a grant of money from the Food Investigation Board in order to develop the manufacture of larger quantities of the liver extract. A manufacturing plant was designed by Dr. Lovern which could deal with one hundred pounds of fresh liver every week. Satisfactory results have been obtained by the following method:

Twenty pounds of fresh liver are minced and mixed up with four gallons of water, the whole mass being brought to a *p*H of about 4.5 with acetic acid. The mixture is stirred vigorously and the temperature raised to 70° C.; it is kept at this temperature for five minutes to coagulate the protein, and then heating is stopped and the mixture allowed to settle for two to three hours. This operation is conducted in a silver-lined vessel, and heating is by means of a hot-water jacket, in turn heated by closed steam coils. After settling, the contents of the "cooker" are: (1) a top layer of oil, (2) an intermediate phase of oil and tissue, and (3) a bottom phase of an aqueous solution. This last is run off as completely as possible, and is freed from traces of oil and suspended matter in a continuous-type centrifugal separator.

The aqueous liquor is opalescent and with a "soapy" appearance, presumably due to the presence of bile salts. It is placed in a silver-lined vacuum still of suitable size, heated by means of a hot-water jacket, which is heated by closed steam coils. The water jacket is maintained at a temperature of 60° C., and the boiling point of the extract under these conditions is certainly well below 50° C. It is concentrated (in the course of about three hours) to about one litre, when it is brown in colour and rather viscous, and run off into sufficient absolute alcohol (about seven litres) to bring the final concentration up to 95 per cent. The gummy precipitate is pressed as free from alcohol as possible and transferred to a vacuum desiccator, in which it gradually becomes a dry, brittle mass; this is powdered. It is extremely hygroscopic, and varies in colour from a pale cream to an orange brown, depending mainly on the type of fish liver extracted. It is palest and most bulky when obtained from whiting liver, which may possibly be related to the amount of glycogen present. The patients state that whiting-liver extract is more pleasant to take than that derived from haddock or cod. The taste is similar to, but rather nicer than, that of mammalian-liver extract. The daily dose during the acute stage is the extract derived from approximately 1,000 grams of raw fish liver. As already noted, 50 per cent. of raw liver is oil, which is discarded, so that the extract is really derived from 500 grams of liver tissue, which is the amount of mammalian-liver extract usually recommended. After the acute stage has passed, approximately half this amount is usually sufficient. Case 8 suggests that a half dose daily may be sufficient, even at the beginning of treatment. The extract derived from 1,000 grams of raw fish liver is approximately 50 grams, and this twentyfold concentration could be considerably increased by the removal of glycogen, which constitutes the greatest bulk of the extract.

Now that fish-liver extract has been shown to be remarkably potent, investigations into the problems of concentration and chemical fractioning are about to be undertaken by Mr. Sharp. The daily dose in grams is divided into three equal parts, and may be administered in orange juice, tomato juice, ginger-beer, or bovril, the last being particularly satisfactory as it disguises the flavour.

| | R.B.C. in Millions | Haemoglobin per cent. | Colour Index |
|---|---|---|---|
| Case 1 | 1.6 | 40 | 1.25 |
| 7 days | 2.4 | 50 | — |
| 28 days | 3.4 | 68 | — |
| Case 2 | 1.5 | 43 | 1.3 |
| 7 days | 2.45 | 53 | — |
| Case 3 | 0.83 | 19 | 1.12 |
| 7 days | 1.7 | 41 | — |
| 14 days | 2.25 | 48 | — |
| 28 days | 3.0 | 70 | — |
| Case 4 | 1.25 | 30 | 1.2 |
| 5 days | 1.97 | 47 | — |
| 21 days | 3.76 | 70 | — |
| Case 5 | 2.7 | 65 | 1.2 |
| 14 days | 3.48 | 92 | — |
| Case 6 | 1.1 | 30 | 1.4 |
| 7 days* | 2.14 | 52 | — |
| 21 days | 3.65 | 80 | — |
| Case 7 | 0.89 | 22 | 1.3 |
| 8 days | 2.03 | 48 | — |
| 14 days | 2.68 | 62 | — |
| 22 days | 3.75 | 80 | — |
| Case 8 | 0.82 | 18 | 1.1 |
| 7 days | 1.82 | 40 | — |
| 13 days | 2.36 | 45 | — |
| 23 days | 3.06 | 50 | — |
| Case 9 | 1.22 | 31 | 1.29 |
| 7 days | 2.06 | 40 | — |
| 21 days* | 3.37 | 62 | — |
| 27 days | 4.63 | 72 | — |

* Treatment stopped.

The diagnosis in the cases quoted in the table was based on a complete clinical and haematological examination, which included red and white cell counts, haemoglobin estimations, differential and reticulocyte percentage counts, calculation of the colour index, cell volume index, and iron index, diffraction measurements, Price-Jones curves, van den Bergh reaction, and test meals. A control period of approximately one week preceded treatment with fish-liver extract. For the sake of brevity only the red cell count and haemoglobin estimation before and during treatment are given in the table.

### SUMMARY OF CASE HISTORIES

*Case 1* was that of a lady of 70 who was so desperately ill on admission that intramuscular liver extract therapy was immediately started. An injection of campolon was given for seven days, and resulted in a reticulocyte crisis and a rise in the red cell count from 940,000 to 1,620,000 per c.mm. After a control period of seven days, during which the blood count remained stationary, treatment with fish-liver extract was started. The red cell count rose thereafter by approximately 100,000 cells per day.

*Case 2* was that of a woman of 56 with marked vomiting and sickness. She was treated with intramuscular injections of campolon for ten consecutive days. The red cell count rose from 1,500,000 to 1,900,000 per c.mm. The patient was then given seven injections of hepatex P.A.F., with completely negative results, and her blood count fell to 1,500,000 per c.mm. Megaloblasts reappeared in the blood, and the patient's clinical state was definitely worse. Fish-liver extract was started, and the reticulocyte percentage count began to increase in forty-eight hours, reaching 10 per cent. on the third day and remaining at about this level for a week. The red cell count rose by approximately one million cells in seven days. No further supply of fish-liver extract being available at the time, the patient was placed on liver and liver extract, and six weeks later the blood level was normal. (Details of Cases 1 and 2 have been published elsewhere.[5])

*In Case 3*, a severe case of pernicious anaemia, the patient was treated throughout her stay in hospital with fish-liver extract alone. The red cell count was doubled in one week and quadrupled in four weeks. The reticulocytes began to increase in forty-eight hours, and reached a maximum of approximately 30 per cent. at the end of one week.

*In Case 4* treatment was solely with fish-liver extract during the patient's stay in hospital. The red cell count was trebled in three weeks. The reticulocyte crisis started in forty-eight hours, reaching a maximum of approximately 20 per cent. on the fifth day.

*In Case 5* treatment was started with a red cell count of 2,700,000 per c.mm. and haemoglobin 65 per cent. At this level the effects of treatment are much less striking than when the blood count is around one million. The result of fourteen days' treatment as reported in the table is accordingly very satisfactory.

*Case 6* was a severe case of pernicious anaemia. Fish-liver extract was given for five days, and then all treatment was stopped. The red cell count was doubled in seven days and approximately trebled in sixteen days. The reticulocytes started to increase on the fourth day, and reached a maximum of 30 per cent. on the sixth day, returning to normal in about fourteen days.

*In Case 7*, treated by Dr. Wilkinson, director of the department of clinical investigations and research, Royal Infirmary, Manchester, the blood count was doubled in seven days and more than quadrupled in three weeks. The reticulocytes started to rise in twenty-four hours, reaching a maximum of 45 per cent. in four days and remaining above normal for approximately three weeks. After the first seven days of treatment the dose of fish-liver extract was reduced to one-half.

*Case 8* was also treated by Dr. Wilkinson. Half the dose used in the cases reported above was given—namely, the extract derived from one pound of whole raw fish liver. The blood count was doubled in six days and trebled in thirteen days. The reticulocytes started to increase in twenty-four hours, reaching a maximum of 45 per cent. on the sixth day: 8 per cent. were still present on the thirteenth day.

*Case 9* was treated by Professor W. T. Ritchie in the Royal Infirmary, Edinburgh. The patient had responded a year previously to liver extract, but had relapsed owing to failure to continue treatment at home. The reticulocytes started to rise on the third day, reaching a maximum of 42 per cent. on the seventh day ; 5 per cent. were still present on the fourteenth day. The red cell count was doubled in one week and quadrupled in four weeks.

### DISCUSSION

That the fish-liver extract made in Aberdeen is of remarkable potency in the treatment of pernicious anaemia is clearly indicated by the reports given above. The red cell count and the haemoglobin percentage were doubled or trebled within a few days of the commencement of treatment. The reticulocyte response appeared within twenty-four to forty-eight hours in several cases. This is comparable to the results of intramuscular liver therapy, and earlier than usually occurs when mammalian-liver extract is given by the oral route. Coincidently with the haematological improvement an extraordinary change for the better occurred in the clinical state of the patients. Within a week they had ruddy cheeks and excellent appetites, and their strength had improved to a remarkable degree. Independent testimony regarding the efficacy of fish-liver extract is shown by Cases 7, 8, and 9, which were treated in Manchester and Edinburgh by Dr. J. F. Wilkinson and Professor W. T. Ritchie respectively, to whom our thanks are due.

The reason why fish-liver therapy has seldom been tried, and then usually unsuccessfully, may be explained partly because of Whipple and Robscheit-Robbins's statement that it is impotent in experimental haemorrhagic anaemia, and partly because of the difficulty of obtaining fresh fish livers. The nausea and disgust which the fresh article induces may be another reason. Several months ago our attention was drawn to an abstract[6] of a paper by Hanssen, Stub, and Forbech, which stated:

> "Fish liver was found unsuitable for treatment of pernicious anaemia, not only because its consumption in any appreciable quantity is disagreeable, but clinically because its effect is very slight or actually absent."

Despite this discouraging report we continued our investigations. I have recently consulted the original paper,[7] and find that the abstract quoted above is extremely misleading. Seven cases of pernicious anaemia are reported. In one a fish-liver extract was used which failed to produce any effect in five weeks, although the patient subsequently responded to ventriculin. The remaining six cases were treated with raw fish liver in amounts of approximately 250 grams daily. In five cases a definite response was obtained, as indicated by an increase in the reticulocyte percentage count and a rise in the blood level. The rapidity with which the response was obtained, and its degree, were considerably less than in the cases reported above. An aqueous extract

of fish liver has also been used in the treatment of six cases of pernicious anaemia by Connery,[8] and although the results were not so striking as those of our own series, a satisfactory response was produced in every case. It may be safely concluded, therefore, that fish liver contains the same active blood-regenerating substance as is present in mammalian liver.

It need scarcely be added that the economic possibilities of this new remedy are of great importance, both to the patient suffering from pernicious anaemia and to the fish industry. At present the extract is being made from whiting, haddock, and cod livers, while a preparation of monk-fish liver is ready for trial. It will be possible to obtain fresh fish liver at a fraction of the cost of mammalian liver, and since the expense entailed in the manufacture of the extract should be similar to that of mammalian liver extract, the cost to the patient should be much reduced. A valuable by-product—fish oil— will help to reduce the cost still further. The fish industry will benefit by having an outlet for the sale of fish livers, much of which at present is scarcely marketable.


### Summary

An extract of fish liver has been prepared which has been shown to be of remarkable potency, as judged by the haematological and clinical improvement which occurred in nine cases of pernicious anaemia.

The economic importance of this preparation to the patient, the manufacturer, and the fishing industry is discussed.



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# PYLORIC AND DUODENAL STENOSIS IN MONGOLIAN CHILDREN


BY

C. PAGET LAPAGE, M.D., F.R.C.P.

PHYSICIAN FOR CHILDREN, ROYAL MANCHESTER CHILDREN'S HOSPITAL; PHYSICIAN FOR CHILDREN, ST. MARY'S HOSPITALS, MANCHESTER; LECTURER ON DISEASES OF CHILDREN, MANCHESTER UNIVERSITY


Experience shows how rarely pyloric stenosis and mongolism are combined, and there is no known reason why they should be. With two large out-patient departments and a special interest in both conditions, it was fifteen years before I found the combination, and then I saw two cases of pyloric stenosis and one of duodenal stenosis in mongols in one year—1924. I have since seen only one other case, and this was a mongol with pyloric contractions which were definite, but not severe enough for operation.

In my opinion both pyloric stenosis and mongolism have slowly increased in frequency during the last twenty years, even after making allowances for wider knowledge and better diagnosis. Pyloric stenosis may occur in two children of a family, in parent and infant, in twins, or in one twin only.[3] It tends to occur in males, and to a certain extent in first-born children. Mongolism rarely occurs in two children of a family, but it may do so,[1] and may even occur in both twins or in one twin only. It tends to occur in the last-born children with no special sex incidence. The following are the case reports in brief.

### Case Records

A. C. H., St. Mary's Hospitals, aged 6 weeks, male, second child. Baby born fairly healthy; breast-fed for three weeks, when vomiting commenced; was given milk and water, glaxo, Nestlé's food. Baby now suffers from projectile and cumulative vomiting, is losing weight, is very constipated, is small and thin, weighing 5 lb. 10 oz., and is a typical mongol. Stomach lavage was used. The vomit was tested and showed absence of free hydrochloric acid. The starch granules were very imperfectly digested. Lactic acid was present and much mucus. On account of the symptoms of pyloric stenosis, Rammstedt's operation was performed by Mr. Morley. A typical pyloric tumour was found. The child improved, and the result was good until nine months later, when it contracted pneumonia and died.

M. S., Royal Manchester Children's Hospital, aged 7 weeks, female, third child. Admitted on January 22nd, 1924. Breast-fed at first. History of jaundice at 9 days; has never been well; forcible and very large vomits; steady loss of weight. Child very small; weighed 5 lb. 10 oz. Typical mongol. Expulsive vomits and definite gastric peristalsis. Rammstedt's operation performed by Mr. A. H. Southam. Child did well after the operation, gaining weight for the first ten days. She did not continue to improve so satisfactorily, and went home some ten days later. Death occurred on April 15th, 1924 (five weeks afterwards) with bronchitis and dyspeptic symptoms.

The third case in 1924 was one of duodenal obstruction, which has been fully reported elsewhere.[2]

G. M., male, St. Mary's Hospitals. The history was that he appeared physically healthy at birth. Though breast-fed, he began vomiting on the fifth day. Vomiting occurred after every feed; it was coffee-ground in colour and projectile in character, coming down the nose. The mother stated that she had observed peristalsis. The stools were sometimes greenish in colour, and sometimes constipated. The child was a typical mongol. The abdomen was protuberant, but peristalsis was not observed. There was a noticeable swelling stretching across the abdomen from the left hypochondrium, passing below the umbilicus and ending on the right side. It was not very resonant, fairly superficial, comparatively soft, and did not seem to pit. The question of operation was considered, but rejected as the infant was very frail. Death took place six days later. Post mortem there was no gastric or pyloric abnormality, but the duodenum was much dilated owing to a constriction, which was due to a band in the mesentery passing across the distal end of the duodenum, anchoring it firmly to the posterior abdominal wall. On section and microscopical examination this band was shown to consist of connective tissue carrying minute branches of the superior mesenteric vessels, and also containing lymphoid tissue. The band continued downwards in the mesentery, apparently as a vessel to supply the lower part of the ileum about two and a half inches from the ileo-caecal junction.

H. C., St. Mary's Hospitals, aged 4 months. Seventh child; mild degree of mongolism. Vomited from 6 weeks of age, vomiting often projectile; 9½ lb. at birth, now, at 4 months, only 9 lb.; breast-fed, with supplementary feeds of milk and water. Vomits after every feed; sometimes projectile; may vomit immediately, or sometimes not for half an hour. The baby is often very uncomfortable after a feed, and squirms with pain; very hungry, taking food greedily. No tumour was felt, but the appearance of the stomach indicated pyloric spasm, and the *x*-ray examination on February 4th, 1932, indicated "moderate delay at the pylorus, spasmodic type." The child is now overcoming his pyloric spasm after treatment with belladonna and careful feeding, but is showing the developmental drawbacks of a mild degree of mongolism.


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[3] Lapage, C. P.: *Practitioner*, March, 1912, No. 525, lxxxviii, No. 3, p. 425.

# A NOTE ON SCARLET FEVER FOLLOWING OPERATIONS IN THE NASOPHARYNX

BY

ALEXANDER JOE, D.S.O., D.S.C., M.D.

MEDICAL SUPERINTENDENT, NORTH-WESTERN HOSPITAL, HAMPSTEAD

Interest in this subject was aroused some years ago by the fact that a certain definite though small proportion of cases of scarlet fever seemed to be closely associated in their onset with the performance of tonsillectomy, and these are now the commonest form of surgical scarlatina encountered. In the years 1930 and 1931, during which it has been our practice to note especially all cases of scarlet fever occurring shortly after surgical operations, we have found that out of thirty-two such post-operative cases thirteen could be associated fairly definitely with tonsillectomy. In 1902 Washbourn[1] previously noted the occurrence of scarlet fever after operations in the nasopharynx and reported seven cases, three following removal of tonsils and adenoids, and one each following removal of adenoids, operation for cleft palate, removal of portion of turbinate bone, and resection of nasal septum.

## Analysis of Post-Operative Cases

Before proceeding to a special consideration of cases occurring after nasopharyngeal operations it may be worth while to survey briefly all the post-operative cases. Of the total a certain number must be regarded as accidental (that is, as contracting scarlet fever in the normal course of events)—in which operation was simply a chance factor. By excluding from that series six cases which did not occur within the maximum limit of the incubation period of ten days, a group is retained in which a prima facie case may be made out for believing that the attack may have been associated with the operation.

In attempting to decide what significance these operations bear to the onset of scarlet fever it is necessary to classify the remainder (26) on a regional basis, and they may be divided roughly into: (*a*) operations in the nasopharynx and associated cavities, (*b*) abdominal operations, and (*c*) others. In group (*a*) we have 19 cases, 13 following tonsillectomy, 2 mastoidectomy, and 1 each following resection of nasal septum, antrostomy, plastic operation on nose, and extensive tooth extraction. Mastoid operations are included in this group, although their connexion with scarlet fever is possibly not so direct, from an anatomical standpoint, as the others. In group (*b*) we have 6 cases, 4 following appendicectomy, and 1 each following operation for undescended testis and intussusception. The sole case in group (*c*) followed an empyema operation.

In group (*a*) there can be little hesitation in assuming a direct causal relation between operation and scarlet fever. Apart from the relative frequency with which these operations appear as antecedent circumstances, the fact that the operation is carried out in the normal habitat of the haemolytic streptococcus is in itself almost presumptive evidence of the relation. Excluding the two mastoids we find that the interval between operation and the onset of scarlet fever was, in 4 cases, two days ; 5 cases, three days ; 5 cases, four days ; 2 cases, five days ; and in 1 case, ten days. This seems almost conclusive as to the part played by operation in determining the onset, and scarlet fever must therefore be regarded as a definite risk after operation in the nasopharynx.

## Prophylaxis

In order that a rational basis for prophylaxis may be provided it is necessary to discuss the mechanism of infection. The raw surface left after nasopharyngeal operations provides an ideal nidus for the haemolytic streptococcus, and the first possibility that suggests itself is that implantation of the causal organism may be the result of contact infection soon after operation. It is also possible, though less likely, that where perfect asepsis has not been secured the organism may be introduced at operation. Washbourn drew attention to still another possibility—namely, that the virus was present in the throat at the time of operation, and that it gained entrance through the cut surface. The present writer agrees with this and suggests that in the majority of these cases the infection is endogenous. The explanation of the mechanism of this type of infection was advanced by Zingher,[2] who, in considering diphtheria and scarlet fever following tonsillectomy, gives instances of individuals susceptible to these diseases harbouring the specific organism without contracting the disease. To account for this he postulates the existence of a local immunity inherent in the mucous membrane. If this is broken down by trauma, or the incidence of some other infection, then the disease occurs. The incidence of scarlet fever after such operations as tonsillectomy, resection of nasal septum, antrostomy, plastic operation on the nose, and even tooth extraction, can thus be readily understood.

From the point of view of prophylaxis this form of scarlet fever is important since no purely administrative measure is likely to be effective in prevention, and it would appear that wider application of methods of individual immunization against scarlet fever is called for in patients about to undergo operations in the nasopharynx. Such patients should be Dick-tested beforehand and positive reactors passively immunized before operation. This procedure is not elaborate, and seems specially desirable before tonsillectomy, which is being so extensively practised throughout the country at the present time.

Fortunately it cannot be said that scarlet fever following tonsillectomy is likely to be of a severe type, and although the preliminary phase of toxaemia is well marked, on the whole these cases do well, running the normal course of scarlatina simplex with no special tendency to complications. But their prevention would remove a bugbear from ear, nose, and throat departments. On the other hand cases of scarlet fever after other forms of surgical interference in the nasopharynx—for example, resection of the nasal septum and antrostomy—are apt to be troublesome, and convalescence is sometimes prolonged.

Although this particular series contains no case in which scarlet fever followed operation for cleft palate, in the writer's experience the disease has occasionally taken on the characters of the septic type with a fatal termination after this operation.

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[2] Zingher: *Amer. Journ. Dis. Child.*, 1926, xxxi, 72.

# Memoranda

## MEDICAL, SURGICAL, OBSTETRICAL

### DEATH FROM RUPTURE OF AN INFARCTED SPLEEN IN A CASE OF MALIGNANT ENDOCARDITIS

Rupture of the infarcted spleen in malignant endocarditis (or in subacute bacterial endocarditis, if the later term be preferred) is sufficiently rare to warrant the record of this case.

The patient, a young girl 15 years of age, was admitted to the Lambeth Hospital, under the care of Dr. Watkin, to whom I am greatly indebted for the clinical notes of the case.

Her history was that at the age of 6 she had an attack of measles followed next year by an attack of acute rheumatic fever. Two further attacks of rheumatic fever had occurred

since, but the actual dates were not very clear in the memories of the patient or her relatives. Her fatal illness was of nine weeks' duration, and she was confined to bed for five weeks at home, the main symptoms there being increasing breathlessness, pains in the chest and back, wasting, and pallor.

During the last four weeks of her life she was under observation in the hospital, and when admitted she was pale and thin, and had a moderate oedema of the legs. Her temperature was of a remittent type (100-101°) and the pulse variable, rapid, and sometimes irregular. The heart was enlarged, and a loud mitral systolic bruit was present. The blood showed a leucocytosis, and a blood culture the presence of a long-chained streptococcus with haemolytic properties. The urine showed the usual changes associated with prolonged pyrexia, and there was not at any time any suggestion, either clinically or from examination of the urine, of renal infarction. Her outstanding complaint while in hospital was severe pain and tenderness over the splenic region. The first attack occurred six days after admission and the last a few hours before death. The last attack was very severe, and was attended with such marked pallor and collapse that Dr. Watkin made the diagnosis of "some form of internal haemorrhage."

At the post-mortem there was general oedema, and all the viscera were waterlogged. The left ventricle was moderately hypertrophied. The mitral flaps and wall of the left auricle were covered with vegetations. Some of these were small and pin-point in size, but the rest were large and sessile. No pedunculated masses of vegetations were found. The mitral flaps were thickened, scarred, and recurved, but were not adherent. Vegetations were present on the mitral chordae tendineae, but the aortic valves and those on the right side of the heart had escaped. The aortic valves showed no gross changes. The peritoneal cavity was full of liquid blood and blood clot, and this had come from a rupture of the lower half of the spleen. This lower half was completely necrotic, and the splenic tissue of a pale buff-pink colour. The capsule was ruptured in several places and the tissue soft and diffluent. A streptococcus, similar to that found in the blood stream during life, was readily isolated from it. The upper part of the spleen was "normal" in appearance, and there was no evidence of old or recent infarction. The kidneys, though having the typical mottled appearance with toxic pallor, had no evidence either of old or recent infarcts, the whole brunt of the infarction, as evidenced also from the clinical observations, having fallen on the spleen.

I am much indebted to Dr. Baly, medical superintendent of the Lambeth Hospital, for permission to publish this case.

J. A. BRAXTON HICKS, M.D., M.R.C.P., D.P.H.
Group Pathologist (L.C.C.), Lambeth Hospital.

## TUBERCULOUS MENINGITIS WITH RECOVERY FOLLOWED BY ACUTE NEPHRITIS

The following case of tuberculous meningitis is of interest, first, because the patient is still alive and able to perform heavy manual labour; secondly, because tubercle bacilli were found in the cerebro-spinal fluid; and thirdly, on account of the fairly complete investigation we were able to carry out.

The patient, a man aged 26, was admitted to the fever department of the Belfast Infirmary on February 4th, 1931, in a semi-comatose condition. The history revealed that he had not felt well for the previous three weeks, and had complained of headache and weakness at the knees. During the week preceding admission he had had very severe headache, with occasional delirium. The earlier history, as gathered from the patient, disclosed "meningitis" as a child, but otherwise nothing of note, nor was there anything significant in the family history.

At the time of admission the patient looked ill, and could answer only simple questions. The tongue was covered with white fur, and sordes were present on the lips; there was definite head retraction with rigidity of the neck, and a positive Kernig sign was present. Nothing else was found except a few non-persistent crepitations at both bases. Some six hours later the patient's mental condition cleared, but the neck rigidity persisted; it was not therefore considered necessary to draw off any cerebro-spinal fluid until the following day, when a lumbar puncture was performed. The fluid was clear and under considerable pressure. Examination showed cells, 150 per c.mm.; lymphocytes; protein, 0.055 gram per cent.; chlorides, 660 mg. per cent.; glucose, 0.034 gram per cent.; and tubercle bacilli present. The patient continued to improve, and by the fifth day after admission the neck rigidity had disappeared. The cerebro-spinal fluid showed clear, and was under slight pressure; numerous lymphocytes were present, but no tubercle bacilli.

On February 13th the patient complained of headache in the left frontal region, and this has occurred at intervals ever since. On February 16th lumbar puncture was again performed. The fluid was still under slight pressure; the cells (60 per c.mm.) and protein (0.06 gram per cent.) were still increased, but the chlorides (730 mg. per cent.) and glucose (0.052 gram per cent.) had practically returned to normal. No tubercle bacilli were found. On February 22nd the patient contracted a mild attack of influenza, with headache and general pains. Progress after this was very slow, the patient becoming somewhat neurotic. On March 10th he complained of diplopia, and his mental condition was poor; later there was some swelling of the face and eyelids, with albumin in the urine. The following day he complained of slight pain over the left eye and was slightly delirious. This cleared in a week, and on March 18th, at his own request, the patient was allowed to go home. Physical examination prior to leaving hospital revealed nothing, but the patient complained of pain in his throat, and at times had a dread of choking.

The patient was readmitted on April 4th with an acute attack of nephritis. He stated that he had felt quite well until a few days previously, when he developed a severe pain in the back, with swelling of feet and legs, and frequency of micturition with pain. His face was slightly swollen; there was no oedema of the legs, but marked tenderness of the lumbar region on the left side. There was pus and albumin in the urine, but repeated examination failed to find organisms. The albumin persisted, and in the middle of May the patient had an acute exacerbation, with blood ++ in the urine, but still no organisms could be discovered. This cleared after a few days, but the albumin persisted until the patient left hospital. On May 26th examination of the cerebro-spinal fluid showed that the cells had dropped to 10 per c.mm., and the protein to 0.03 gram per cent.; the chlorides and glucose were normal. Shortly before leaving hospital on June 17th the blood urea was 84 mg. per cent., and the urea concentration did not rise above 1.9.

| Date | Amount | Nature | Cells | Protein | Chlorides | Glucose | Organisms |
|---|---|---|---|---|---|---|---|
| | | | | percent. | percent. | percent. | |
| 6/2/31 | 45 c.cm. | Clear fluid under pressure | 150 p.c.m. lymphocytes | 0.055 gm. | 660 mg. | 0.034 gm. | Tubercle bacilli present |
| 9/2/31 | 7 c.cm. | Clear fluid slight pressure | +++ lymphocytes | — | — | — | No T.B. seen |
| 16/2/31 | 15 c.cm. | Clear fluid slight pressure | 60 p.c.m. lymphocytes | 0.06 gm. | 730 mg. | 0.052 gm. | No T.B. seen |
| 26/5/31 | 10 c.cm. | Clear fluid normal pressure | 10 p.c.m. | 0.03 gm. | 730 mg. | 0.06 gm. | — |
| 24/3/32 | 8 c.cm. | Clear fluid normal pressure | 26 p.c.m. | 0.04 gm. | 730 mg. | 0.06 gm. | — |

The patient was sent for and admitted to hospital for routine examination on March 21st, 1932. He stated that he felt quite well, and was able to undertake heavy manual labour. There were no abnormal physical signs; the urine showed a slight trace of albumin; the blood urea was 41 mg. per cent., and the urea concentration (McLean) had risen to 3.25. In the cerebro-spinal fluid the cells had risen to 26 per c.mm., and the protein to 0.04 gram per cent.

The sputum and urine were examined repeatedly for tubercle bacilli, with negative results. The radiogram of the chest showed no evidence of any tuberculous involvement of the lungs, but a general enlargement of the chest shadows; the radiogram of the abdomen showed a calcified mass of glands in the right side opposite the fifth lumbar vertebra. The Wassermann reaction was negative.

I wish to express my thanks to Dr. A. Gardner Robb for his permission to report this case, and to Dr. J. T. Lewis for the pathological reports.

Belfast. S. ANDERSON, M.B., D.P.H.

# Reviews

## MAN AND MEDICINE

Dr. SIGERIST, who was formerly the distinguished pupil of Sudhoff at Leipzig, and who has recently succeeded Dr. William H. Welch as professor of the history of medicine at the Johns Hopkins University, Baltimore, publishes an English translation of his *Einführung in die Medizin*, under the title *Man and Medicine*.[1] The work, he says, is intended primarily to acquaint young people who have chosen to enter medicine with the nature of their studies and their future profession, and thus to guide and help them through the intricacies of the work which lies before them. "The book is in fact a first attempt to picture the whole structure of medicine in the frame of general culture." It begins with a study of man, his structure, which is anatomy; the function of his organs, which is physiology; his mind and spirit—psychology. The author then proceeds to a consideration of the sick man; and from the sick man it is but a step to disease, and from disease to the causes of disease, to its cure by medical aid, and more especially by the physician.

Professor Sigerist uses his intimate acquaintance with the history of medicine to elucidate the various stages in the same way that a comparative anatomist uses his knowledge of the structure of the lower forms of life to interpret the successive stages in the development of the higher types. Thus in treating of the sick man he shows that in the lowest stages of culture he was left to die or recover unaided by other members of the tribe. The impulse of self-preservation overcame all social instincts. In a somewhat higher scale sickness was the result of witchcraft. The invalid became a victim, and the guilty person was sought for to be punished or made harmless if he was a man, to be driven out if he was a spirit. In a still higher civilization the sick man is atoning for sin committed either by himself or by his forebears. The attitude still persists, especially in connexion with venereal disease, which is thought by some to be sent as a direct punishment for violations of a moral code. In classical times the Greek world was a world of health. Health was rated as the highest possession, and sickness was considered a sign of inferiority, not of sinfulness. The idea remains and has rendered miserable the life of many a humpbacked or club-footed person. Christianity taught a much higher code. It taught that sickness is a means of purification, is a friend of the soul, develops the spiritual faculties, and turns man's thoughts to a future life. The whole attitude towards the sick man changed. Voluntary contributions were made for the sick, hospitals were founded for their reception; monastic orders were established to nurse them, and the sick man was looked upon and treated as the impersonation of Christ in human form. In similar manner does Professor Sigerist develop the theme of his various essays, making interesting reading more suitable for the post-graduate and the thoughtful medical man than for the pupil in the early stages of his training, for whom it is professedly written.

The translation is fairly good, but it needs thorough revision by one who knows about the subjects dealt with and is at the same time conversant with the English language. There are many technical passages which have not received their ordinary English equivalents. The translator in particular has not mastered the intricacies of "shall" and "will," "should" and "would." The incorrect use of these verbs, constantly repeated, becomes irritating. The book bears the imprint of an English publisher, and is said to be printed in Great Britain, but the spelling throughout follows the American usage.

[1] *Man and Medicine. An Introduction to Medical Knowledge.* By Dr. Henry E. Sigerist. With an introduction by Dr. William H. Welch. London: George Allen and Unwin, Ltd. 1932. (Pp. x + 340. 12s. 6d. net.)

## A PRÉCIS OF DERMATOLOGY

Dr. RICHARD L. SUTTON and his son, whose well-known treatise on skin diseases has passed through seven editions, have now written *An Introduction to Dermatology*[2] of more modest dimensions, intended for those beginning the study of this difficult subject. It appears that the actual writing of the book has been almost entirely carried out by Dr. Sutton, jun.; for his father, in the preface, states that in his opinion a volume composed by a young and unsophisticated man is more readily understood by the student. At the same time the parental guidance has been at hand to supply those practical elements which can only be the fruit of time and personal experience. As is to be expected this is a thoroughly sound textbook which can safely be put into the hands of students. The introductory chapters on the anatomy and physiology of the skin and the principles of treatment will be found extremely useful. No attempt has been made to achieve originality in the classification of skin diseases, and the authors have been content to follow that proposed a good many years ago by Radcliffe Crocker. So long as we are unable to provide an aetiological basis for classification Crocker's plan provides satisfactory pigeon-holes for the dermatological labels in ordinary use.

The chief criticism we have to make on this book is that it includes too many short paragraphs on conditions of very great rarity, such as the student or even the general practitioner is most unlikely ever to see—for example, Fox-Fordyce disease, lichen nitidus, necrobacillosis, erysipeloid, berlocque dermatitis, etc. Such rarities may well be relegated to larger and more exhaustive treatises intended primarily for the specialist. In any case the student, when he first approaches the study of dermatology, is likely to feel himself overwhelmed by the complexity of the subject, and in particular by the vast number of different labels with which he believes that he must become familiar. The inclusion of so many rarities in a work intended to serve an introduction must increase his feeling of helplessness and confusion. Many of these dermatological curiosities might well be omitted, and the space set free for a more detailed consideration of some of the commoner ailments. No review of a textbook of dermatology is complete without mention of the illustrations. These are 183 in number, and for the most part are clinical photographs with a few diagrams. The photographs are distinctly good, but there are no coloured illustrations. The general impression left on examination of the volume now before us is that it is essentially a précis of the exhaustive textbook of the subject by the same authors and that while sound it is rather destitute of a personality of its own. It provides no argument against advising the young student and general practitioner in this country to buy British.

## THE MAKE-UP OF THE DELINQUENT

The viewpoint of criminologists has changed considerably during recent years. The modern tendency is to pay increasing regard to the mental and physical make-up of the criminal, and to attempt to establish a correlation between this and the crimes of which he is guilty. Many contributions have been made to this aspect of the question, and in *Constitution-Types in Delinquency*[3] the author, Dr. W. A. WILLEMSE, attempts to explain the motives, acts, and social behaviour of delinquents by a study of their temperamental and body types as formu-

[2] *An Introduction to Dermatology.* By Richard L. Sutton, M.D., Sc.D., LL.D., F.R.S.Ed., and Richard L. Sutton, jun., M.D. London: H. Kimpton. 1932. (Pp. xvi + 265; 183 figures. 25s. net.)

[3] *Constitution-Types in Delinquency.* By W. A. Willemse, M.A., Dr. Phil. International Library of Psychology, Philosophy, and Scientific Method. London: Kegan Paul, Trench, Trubner and Co., Ltd. 1932. (Pp. viii + 266; 51 illustrations. 15s. net.)

lated by Kretschmer, Jaensch, and other writers. The chief of these types are designated leptosomes (asthenics), athletics, schizoids, pyknics, and dysplastics. These are considered by Kretschmer to be related to certain characteristic types of insanity, and their physical differentiation depends upon such factors as anthropometrical measurements (skull, chest, limbs, height, and weight), muscularity, fat accumulation, and amount and condition of hair, etc. Dr. Willemse here records a series of detailed observations concerning these various points made upon a total of 177 delinquents between the ages of 16 and 21 years, the majority of whom were detained in the reformatory of Tokai, South Africa. The author's investigation was obviously conceived and carried out in a scientific spirit, and his observations were made, and are recorded, with care and considerable detail. Those persons, therefore, who accept Kretschmer's hypothesis will undoubtedly find much of interest and value in this book. At the same time, while few persons will deny a certain correlation between the physical and the psychological constitution of the individual, there are many who will be disposed to consider that temperament and character, and consequently behaviour, are as much, or even more, a result of the influences brought to bear upon the mind in early life and of the general environment than they are of the somatic make-up of the individual. There are probably still more who will doubt whether the types formulated are as definite and have the significance which is claimed for them. As a matter of fact, transitional forms and mixtures of types occur in almost endless profusion. An individual may have the head of one type, the limbs of another, and the fat accumulation of yet another. Even Kretschmer himself admits that mixed are as frequent as pure types. There is, moreover, no constant relation between these types and race, and even the relation of "pure" types to temperament, character, and personality is by no means established. These facts would appear to militate seriously against the practical application of Kretschmer's hypothesis to the study of delinquency, or, indeed, to any other form of behaviour. This criticism, however, relates to the hypothesis only. It is in no wise intended to detract from the interest and value of the book to those who accept the doctrine upon which it is based.

## CHEMOTHERAPY

The Handbook of Chemotherapy[4] by Dr. Viktor Fischl and Professor Hans Schlossberger, when completed, will consist of three volumes. The first contains 357 pages, and deals with organic compounds that do not contain metals. The remaining two volumes will be devoted to metallic compounds and to general problems. The textbook is intended for purposes of reference, and, judged by the standard of modern German encyclopaedias, it will be restricted to very modest dimensions; it is, however, the most complete work that has yet appeared on this subject. The arrangement adopted is to deal with a particular group of drugs in each chapter. The history, chemistry, pharmacology, toxicology, and therapeutic use of all important drugs are considered. An extensive list of references is provided at the end of each chapter.

The survey of the literature has been carried through carefully and thoroughly. The size of the volume has been kept within moderate dimensions by presenting the information in an extremely condensed form. One of the special features of the book is a series of extensive tables, by means of which the comparative activities of related drugs can easily be ascertained. It will be found of the greatest value by all workers in chemotherapy, for although this is one of the youngest of the medical sciences yet already its literature presents a serious difficulty to the would-be investigator. The science is based on the study of the effects produced by series of different compounds upon series of different parasites, and owing to the ordinary laws of permutations and combinations the detailed evidence thus amassed very quickly becomes unmanageable by reason of its bulk. Moreover, chemotherapy is very largely concerned with tropical diseases, and hence the evidence is scattered through journals written in every language and varying widely in character. All workers in chemotherapy will have reason to be grateful to the authors for having undertaken the laborious task of collecting and classifying this evidence.

## TUMOURS OF BONE

Among the many notable advances that are being made at the present time in our knowledge of the pathology of bone those concerned with new growths are the least conspicuous, and relate mainly to questions of nomenclature and classification. Such changes as have been made in this respect are exhibited in Sabrazès, Jeanneney, and Mathey-Cornat's treatise on Tumours of Bone,[5] in which the subject is fully presented in its anatomical, clinical, and therapeutic aspects. As a specially valuable feature of the work may be mentioned the numerously illustrated sections on radiographic diagnosis.

The authors state that the classification of bone tumours is at present undergoing revision, and accordingly, instead of following a strict classification, they have arranged the subject-matter in a series of monographs under the headings of benign tumours, giant-celled tumours (that is, myelomas), cysts and osteitis fibrosa, and malignant growths. Osteitis fibrosa has been included in order to discuss the nature of the so-called "brown tumours" with which it is sometimes associated. The authors accept the view of Lecène that these are osseous dystrophies of hyperplastic type and not true tumours. A malignant transformation of the lesion in osteitis deformans is stated to occur in about 10 per cent. of the cases: Bird mentions nine sarcomas in sixty-four cases. The monograph on benign tumours calls for no comment. As regards the second group, the myelomata, it is still considered worth while to collect statistics to prove that they are non-malignant. Geschichter and Copeland have recently examined 222 cases, and in only three of these were pulmonary metastases recorded as the cause of death. These would probably be cases of malignant transformation such as occasionally happens in other forms of non-malignant growth.

The final monograph includes osteogenetic sarcoma, Ewing's sarcoma, angio-endothelioma, multiple endothelioma, myeloma (that is, myelomatosis), chloromyeloma (that is, chloroma), fibrosarcoma of the periosteum, and secondary tumours. The term "osteogenetic" is stated to signify a sarcoma derived from bone, rather than necessarily producing bone; it would thus include fibrosarcoma as a variety. It is considered to be a convenient term as excluding tumours of the round-celled type. Ewing's sarcoma appears to be a new term introduced by the authors; it is one of the three forms originally included in the term "Ewing's tumour," which comprises also angio-endothelioma and multiple endotheliomata. A very good description is given of Ewing's sarcoma; it consists of round cells arranged diffusely or in layers around capillary blood vessels. It seems hitherto to have been known simply as a round-celled

[4] *Handbuch der Chemotherapie.* By Dr. Viktor Fischl and Professor Dr. Hans Schlossberger. Leipzig: G. Fischer. 1932. (Pp. viii + 357. Subscription price, M.29; retail price, M.34.)

[5] *Les Tumeurs des Os.* Par MM. J. Sabrazès, G. Jeanneney, R. Mathey-Cornat. Paris: Masson et Cie. 1932. (Pp. 437; 165 figures. 80 fr.)

sarcoma, but Ewing regards it as probably an endothelioma of the perivascular sheaths, and has worked out its natural history very thoroughly. The statistics of Escher, Meyerding, and Besley are referred to on the results of amputations and disarticulations in cases of osteogenetic sarcoma. Escher reports that of sixty-three cases twenty-one died with metastases and nineteen without metastases less than a year after operation, and only six survived for more than two years. Meyerding in 100 cases records sixteen as living after five years, while in Besley's fifty-six cases none survived for that period. Patients suffering from osteogenetic sarcoma and not operated upon live from a few months to two and a half years, and they rarely live longer than this after amputation. Statistics concerning irradiation are scanty. The authors' experience is that there is an amelioration for a month or two, followed by rapid recrudescence and generalization. The duration of life in unoperated cases of Ewing's sarcoma appears to be somewhat longer than in osteogenetic sarcoma. Irradiation has occasionally prolonged life to three or four years, but this method of treatment calls for great caution and understanding in its application to such cases.

The fibrosarcoma included among tumours of bone affects the latter only secondarily ; it is a tumour of the periosteal fascia and not of the bone itself. It is probably mistaken at times for an osteogenetic sarcoma, from which, however, it differs greatly as regards malignancy, having a slow evolution of three years or more—eight and nine years in two of the authors' cases.

## NOTES ON BOOKS

The July number of the *Annals of Medical History*[6] contains seven articles on topics relating to various parts of the world. Mr. W. J. Bishop, library assistant at the Royal College of Physicians of London, tells the story of Thomas Dimsdale, the Quaker, who inoculated Catherine the Great of Russia and the Grand Duke against smallpox and afterwards became a banker. In the third instalment of the "Life and times of William Harvey" the personality, practice, and will of the discoverer of the circulation are described by Sir Wilmot Herringham. In his account of a very different man, Johann Friederick Struensee (1737–72), Dr. W. P. Peterson of Chicago shows how an alert, cynically bored physician became dictator of Norway and Denmark, issued six hundred decrees and orders in as many days, and was soon after publicly executed. The cover of this number bears the portrait of David Grüby (1810–98) of Paris, whose epoch-making work on mycology is described by Dr. Theodore Rosenthal of New York. In an article on hernia healers Dr. J. E. Raaf summarizes the ancient history of this affection from the earliest times. Dr. G. B. Roth, writing on the "original Morton inhaler," concludes that this description does not accurately describe the exhibit in the Smithsonian Institution. The medical history of Bruges and its hospital of Saint Jean is told in an illustrated article by Dr. H. M. Tovell of Toronto.

In preparing the ninth edition of *Wheeler and Jack's Handbook of Medicine*,[7] Professor JOHN HENDERSON has found it necessary to recast certain sections, including those relating to vitamins, pernicious anaemia, and encephalitis lethargica. New matter has been introduced in respect of coronary thrombosis, branch-bundle block, gastric syphilis, acute febrile polyneuritis, narcolepsy, and certain types of neurosis. Careful attention has been paid to compression so as to prevent the handbook from becoming unwieldy. The general arrangement facilitates reference ; the information given is concise ; and the indexing is adequate. The popularity of this book should be fully sustained.

The third edition of Professor BIGGER'S *Handbook of Bacteriology*[8] has now appeared only a little more than three years after the second edition. Changes have been found necessary in the chapters relating to immunity, and the opportunity has been taken to incorporate some new material. As an introduction to the underlying principles of bacteriology the book has a distinct value ; a wide range of subjects is dealt with in about 450 pages.

The third edition of Dr. CHARLES PORTER'S *Sanitary Law*,[9] prepared with the collaboration of Dr. JAMES FENTON, summarizes the subject with which it deals, again in the form of question and answer. For students preparing for examination, who have in consequence already acquired some knowledge of the Acts and Regulations, the book, employed as a test of proficiency, should serve a useful purpose. Recent changes and additions are referred to, and much ground is faithfully covered, although compression is in some cases severe. As we indicated, however, in our review of an earlier edition, we doubt whether the difficulties of the beginner are really lessened by reliance on the formula of a catechism. The discontinuous arrangement of the contents is unfavourable to a constructive view.

A third edition has now appeared of *A Guide to Anatomy for Students of Medical Gymnastics, Massage and Medical Electricity*,[10] by E. D. EWART. In the work of revision the author has had assistance from Dr. Dorothy Hanson. The main purpose of this work, first published nearly twelve years age, is to provide a handbook useful to those preparing for the examinations held by the Chartered Society of Massage and Medical Gymnastics.

In *Urine Analysis*[11] Dr. DAS GUPTA of the Bengal Medical Service has provided a simple textbook of chemical urinary analysis for students and medical practitioners, which should certainly be of value for those who practise in Indian villages far distant from laboratories. Although an unpretentious volume, it contains much practical information.

Volume lvi of the *Transactions of the American Gynecological Society*[12] relates to the year 1931, and contains the usual interesting and practical series of clinical articles. In his presidential address Dr. William P. Graves discusses the unification of science and its relation to the control of life. The surgical side of gynaecology is represented by articles on the reconstruction of the urethra and vesical sphincter, and the prevention and repair of hernia in low median-line incisions, and by three papers relating to carcinoma of the cervix. The value of hypertonic glucose therapy in pre- and post-operative conditions is also considered. Pathological topics dealt with include regeneration of the uterine mucosa after delivery, certain ovarian tumours, the rabbit ovulation test in the diagnosis of pregnancy, and the morphology of menstrual blood. The volume also contains clinical studies of the sex hormones, the barbituric acid hypnotics, and the use of an anterior pituitary extract in the treatment of functional uterine bleeding. A description is given of plans and equipment for out-patient work in gynaecology and obstetrics.

[6] *Annals of Medical History*. New Series, vol. iv, No. 4, July, 1932. Edited by Francis R. Packard, M.D. New York: Paul B. Hoeber, Inc. ; London: Baillière, Tindall and Cox. (Pp. 321–414 ; illustrated. Subscription in Great Britain, £2 10s. for volume of six numbers.)

[7] *Wheeler and Jack's Handbook of Medicine*. Revised by John Henderson, M.D., F.R.F.P.S. Ninth edition. Edinburgh: E. and S. Livingstone. 1932. (Pp. xix + 654 ; 30 figures. 12s. 6d. net.)

[8] *Handbook of Bacteriology*. By Joseph W. Bigger, M.D., D.Sc., F.R.C.P.I. Third edition. London: Baillière, Tindall and Cox. 1932. (Pp. xvi + 459 ; 84 figures, 5 plates. 12s. 6d. net.)

[9] *Sanitary Law in Question and Answer*. By Charles Porter, M.D., B.Sc., M.R.C.P.Ed., and James Fenton, M.D., D.P.H. Third edition. London: H. K. Lewis and Co., Ltd. 1932. (Pp. xvi + 219. 7s. 6d. net.)

[10] *A Guide to Anatomy for Students of Medical Gymnastics, Massage and Medical Electricity*. By E. D. Ewart. Third edition. London: H. K. Lewis and Co., Ltd. 1932. (Pp. xii + 338 ; 98 figures. 12s. 6d. net.)

[11] *Urine Analysis*. By Byomkes Das Gupta. Calcutta and London: Butterworth and Co., Ltd. 1932. (Pp. vi + 141 ; illustrated. Rs.3, or 5s. net.)

[12] *Transactions of the American Gynecological Society*. Edited by Floyd E. Keene, M.D. Volume lvi. St. Louis: The C. V. Mosby Company. 1932. (Pp. lxi + 274 ; illustrated.)

# POPULAR LECTURE: THE BIOLOGY OF HUMAN NATURE

The Popular Lecture of the Centenary Meeting was delivered by Professor Julian Huxley in the Great Hall of University College on the evening of July 29th. Dr. E. Kaye Le Fleming presided over a crowded hall.

Professor Huxley began by pointing out that man was in many respects a unique organism. He was an animal, but with properties so different from those of other animals as to place him in another kingdom. Certain properties which he had in common with other organisms —glands, chromosomes, and the general machinery of anatomy and physiology, immunity reactions, and biochemistry, and the process of ancestral evolution—must be taken for granted, but he was biologically unique in regard to the variation which he displayed within the single species and in the qualities of his mind. The latter was the more important, because it was really the cause of the former. In man mind had evolved to greater fluidity than in any other creature. In lower organisms there were rigid instincts which automatically brought about a certain kind of urge, followed by a certain kind of action. In the higher types there was a certain margin of plasticity of behaviour, but in man such plasticity passed a critical point and became the dominant feature, to which the rigid instincts were subordinate. Where instinct was dominant, the instinct, the urge, and the response made but a single channel ; in man the process was rather that of a series of reservoirs, separated or connected by elaborate dams or sluices. Thus in one individual knowledge might be pursued for its own sake, giving the scholar and the scientist ; in another the reservoir might be at the motor end, yielding satisfaction in pure skill, as in mechanics or dancing ; or again it might be in the emotions, resulting in the lover or the mystic. In man, too, the different channels ceased to be isolated, and several or all of them might unite to give complex emotions, resulting in new urges and new behaviour. In love, for example, every possible emotion could be linked up to reinforce or counteract the primary sex instinct, giving a complex emotional stimulus which had no parallel in animals.

## Development of Abstract Ideas

Man had also been able to reach the plane of conceptual thought, which had made possible the evolution of language and the development of abstract ideas. Language had led to the development of tradition, biologically a unique thing, constituting a social form of heredity operating side by side with the true or biological form, and making it possible for things to happen much more quickly in human affairs than in those of any other species. The fact of abstraction had been less thoroughly established, but was none the less important. Once it could be said that a thing was good or true, some standard was presupposed which was crystallized in abstract words, such as "goodness" or "truth," and because there was a word "truth" it was almost automatically believed that truth existed as an entity, and that there must be some absolute truth to be discovered.

Professor Huxley then passed to consider the large part which incertitude played in the life of man—intellectual indecision, emotional conflicts, suspended judgement, and all inner states which did not permit of useful action as an outlet. A great part of human development consisted in the resolution of conflicts and the establishment of sufficient certitude for action. Very lowly animals could react in only a few ways and respond only to limited situations. All the situations to which the jellyfish could respond were the food situation, the situation of well-being, and one or two situations of discomfort. In more complex organisms inhibition secured certitude of action at various levels of behaviour. He illustrated this from the mechanism of opposing muscles and of reflex centres. In animals with clear-cut instincts it was extremely rare to find two instincts interfering with one another in behaviour. When the situation was such as to arouse two competing instincts, they came into action alternately. In most animals the competition between instincts was also reduced by the fact that the breeding season was limited to a short period of the year. By artificial means, as Pavlov had demonstrated with dogs, situations might be imposed upon animals which were incapable of being resolved, but in the ordinary way the temporary indecision which a situation might demand was of brief duration, one or other of the primary instincts gaining control.

## Man's Variability as a Species

In man these states were of much longer duration. The method of reducing incertitude and conflict always involved the same principle of inhibition of one set of impulses and reinforcement of another, but neuroses and certain types of insanity were the result of very faulty methods of applying inhibition. Man also was the one organism who was never complete in the sense that animals might be complete ; he was continuously discovering new desires and satisfactions, and he was the first organism to substitute conscious reason and purpose for habit and instinct as a means of securing action. The real biological problem confronting man was to prevent himself from taking short cuts for the resolution of his inevitable conflicts and the securing of his necessary adjustments.

Another important factor was man's variability as a species. Nature tended to an enormous multiplication of species with very little variation within each, but in human evolution two factors had operated to produce a result quite different from elsewhere—namely, mass migration, which kept on bringing the variants into contact, and also the fact that it was tradition more than structure or instinct which regulated human behaviour. As a result of constant migration and generalized instinct, the divergent groups of men had never succeeded in becoming isolated physiologically. By virtue of interbreeding between migrant members, single groups came to throw up a much greater range of types, owing to Mendel's law, than would a wild species, and this produced further curious consequences. It meant that there must always remain a residuum of incomprehensibility between different members of society. The tough-minded could never really understand the tender-minded ; the moron could never appreciate the philosopher, or vice versa. It was true that conflict would exist were all human beings alike, but their diversity of type increased the range of conflict.

The realization of this special characteristic of diversity also emphasized the need for the individual treatment of human problems. "We shall never succeed," Professor Huxley said, "unless in every problem involving human material we pay as much attention to individual differences as to common resemblances." Man, an organism of unlimited desires, must lead a limited life ; capable of abstract thought, he must live in a concrete environment ; with a mind impelling him towards unity, political and social, he could not help generating diversity, and having been born helpless, and required to adjust himself to a social environment, he must know frustration as well as achievement.

## Development towards Rational Action

The lecturer distinguished three stages in what he called the "soul's progress"—namely, the pre-rational, the rationalizing, and the rational. In the first stage the human being had neither the experience nor the capacity to deal rationally with the situation. Adjustment during this stage was by simple habit formation, but where conflict persisted it might be necessary to use one part of the mind against another, one set of impulses to suppress another, and thus establish a sort of hierarchy in the

emotional system. But the structure of the personality that developed in this period was by no means suited to more mature situations. As the process was primarily unconscious the basic structure thus laid down was relatively inflexible, and if it should prove unsuitable to the later development it was called upon to undergo there would be trouble. Appeasement of a sense of guilt by mere penance or punishment, or the striking of moral bargains, was a sign of the resolution of conflict on the pre-rational plane.

The rationalizing stage was one in which the rational faculty was growing up and demanding exercise. Justification was now sought in the way of reasons for actions and feelings ; the reason was enlisted to aid in the resolution of emotional conflict. In the third stage, which was the rational one, there was a deliberate facing of limitations and the working out of a rational technique of living. In the final outcome the rational mind rejected all absolute solutions and remained obstinately relativitist. Modern science laid no claim to the possession of absolute truth ; it allowed more and more that all the truth it discovered was not absolute but relative. But science was a method—it appeared to be the only method —of discovering constantly more truth, and it became so by declining more and more to employ abstract principles. Science no longer even pretended to deal with ultimates ; its most elaborate systems were mere conveniences. Yet, in spite of this, science had proved to be the best method of achieving practical certitude in the fields to which it had been applied.

All this might seem very commonplace, but pursued to its logical conclusion it became important, for it presented a new unifying concept by which the individual could combine stoic resignation with hopeful enthusiasm, could combine the negative and positive in rational union—namely, the concept of development. To talk in terms of ultimates and absolutes was a sign of immaturity ; development must be achieved by thinking in terms of processes and relations. Professor Huxley thought it safe to say that the next fifty years would see an enormous advance in the technique of the development of rational personality. The urgent need was that the eugenic idea should permeate the common consciousness, and the close connexion between social organization and racial change should be vividly realized, also the spread of the conviction that the most nearly ultimate thing was neither salvation in the next world nor wealth in this, but the pilgrimage of the individual to his own maturity.

In these developments, Professor Huxley concluded, the medical profession was called upon to play a notable part. Medicine could not help but make contact with every branch of activity. He supposed that historically the medical man must begin as a " medicine man," a man whose function was to cure a particular complaint in individual patients. In the last century a second main advance had appeared, that of public health and preventive medicine ; educational and industrial medicine had also arisen. To-day two new fields were calling for fuller invasion by medicine: one was psychology, especially normal psychology—the idea of psychological public health must arise ; the other was racial medicine. Both the quantity and the quality of the population were very important factors in the general well-being of the community. The individual medical man should be prepared to advise on conception control and hereditary prognosis. Moreover, the economics of the profession needed eventually to be reorganized so as to make the prevention of disease more " paying " than its cure.

A vote of thanks to Professor Huxley was accorded on the proposition of the chairman, Dr. LE FLEMING, seconded by Dr. A. J. ORENSTEIN, who remarked that one of the rarest things to be encountered was fearless and original thinking, of which the audience had had an illustration that evening.

## VETERINARY CONGRESS

The annual congress of the National Veterinary Medical Association of Great Britain was held at Folkestone from August 8th to 13th, when a number of papers of medical interest were presented. At the annual business meeting the name of the association was changed to " The British Veterinary Medical Association."

On August 9th Mr. R. LOVELL of the London School of Hygiene and Tropical Medicine read a paper entitled " Relation of meat and meat products to bacterial food poisoning in man." He pointed out that such poisoning might be due to Salmonella bacteria, to the pre-formed toxins of *Cl. botulinum*, to staphylococci, and, if present in large numbers, occasionally to comparatively harmless bacteria. In Britain, the usual cause was the Salmonella organisms. He believed that a large number of cases were due to food which was originally sound but subsequently became contaminated during preparation ; in these cases, rodents and dogs were possible sources of infection, rodents which were being destroyed by viruses being particularly dangerous. In a number of cases, however, infection had been traced to the food-animal itself, and emergency slaughter was the prime danger in these cases. Eggs, particularly duck's eggs, might on occasion be not without danger to man.

On August 10th Lieut.-Col. T. DUNLOP YOUNG discussed meat inspection in Britain and abroad. He emphasized the lack of any organized system in this country and the laxity of the veterinary profession in securing the right due to the members with their special training to be recognized as experts in meat inspection, as in other countries. The present law, he declared, was in need of amendment, and the English law was much behind that in force in Scotland and other countries. At the same meeting Major D. S. RABAGLIATI discussed milk inspection in a similar manner, comparing the administrative methods and milk regulations, the part played by the veterinary profession, especially in regard to the inspection of milch cows, the methods of dealing with bovine tuberculosis, and the powers available by which milk from diseased cows could be prohibited from use, in the various countries.

On August 12th Captain R. SIMPSON discussed the clinical examination of the cow's udder, emphasizing its importance on account of the veterinary surgeon's increased responsibilities at the present time in connexion with the milk supply. He believed that most of the pathological conditions could be diagnosed clinically, combined with accurate microscopy. He discussed fully the clinical features of tubercle infection of the udder, paying particular attention to the pre-clinical stage when bacilli are being eliminated in the milk. At the same session Dr. W. HORNER ANDREWS considered vaccination against bovine contagious abortion and the relation of the disease to human undulant fever. He pointed out that while it was now certain that *B. abortus* might infect man and cause undulant fever, and while many cases were probably undetected, the total number must be comparatively small. The organism had only a low virulence for human beings, but some individuals appeared to be more susceptible. Some strains also were more pathogenic, particularly porcine strains. Milk accounted for less than half of the human cases. Abortion could be ideally eradicated by isolation methods, but these were often impossible. Sanitary methods, while valuable, were insufficient, while dead vaccines gave only a weak protection. Live vaccines, however, seemed generally to prevent abortions or reduce their numbers considerably. They did cause a proportion of udder cases, but fewer than the natural disease. So long as the live vaccine was used for infected herds only, their use was beneficial and unobjectionable ; they must never be given to pregnant animals.

Among the other subjects discussed were recent advances in veterinary therapeutics, anaerobic infections of sheep, and gastric and intestinal diseases in dogs and cats.

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# BASOPHIL ADENOMA OF THE PITUITARY

For those who are zealous to see the status of medicine in biological science maintained there are few more unsatisfactory chapters in its modern literature than some of those dealing with endocrinology. In summarizing his conclusions at the end of a singularly suggestive paper,[1] "The basophil adenomas of the pituitary body and their clinical manifestations," Professor Harvey Cushing aptly remarks that "of all subjects that engage the attention of the profession at the present, that of endocrinology particularly lends itself to the temptation of impressionistic speculation." Happily there is a body of precise knowledge to which the name of endocrinology may be rightly applied, and to which those who prefer facts to fantasy in medicine may turn. Emphasizing the great part played by adenomas in producing disorders of ductless gland function, Cushing also points out that such adenomas may be small, producing no tumefaction of the gland in which they arise, and may yet display intense secretory hyperactivity. Thus the significance of an adenoma may lie, not in its bulk, but in the degree of its functional activity; while from its frequently diminutive proportions such a lesion does not necessarily leap to the eye of the clinician or of the pathologist, but to be discovered must be specifically sought for.

Cushing traces the history of the successive observations, clinical and experimental, by which the two familiar syndromes of pituitary adenoma have been isolated and identified. To these two he now proposes to add a possible third—that of a basophil adenoma. Cells of two main types have been recognized in the anterior lobe of the pituitary body: (1) the so-called chromophobe or neutrophil cells with a non-granular cytoplasm, and (2) cells with a granular cytoplasm. The latter consist of acidophil cells with granules showing an affinity for acid dyes, and basophil cells with granules showing an affinity for basic dyes. An adenoma may arise from any of these three types. The commonest form is the chromophobe adenoma. Despite what Cushing says of the secretory activity of many ductless gland adenomas, it is probable that the chromophobe cell produces no hormone, while the adenoma arising therefrom produces an unmistakable picture of glandular deficiency—a deprivation syndrome. We may suppose that by reason of its bulk the chromophobe adenoma compresses the acidophil and basophil elements in the anterior lobe of the pituitary and thus impairs their activity. On the other hand, the glandular and other hyperplasias of the less commonly seen acidophil adenoma, producing the familiar picture of acromegaly, are as plainly phenomena of hypersecretion, of hyperpituitarism: the extreme degree of acromegaly that may be associated with a tiny adenoma affords a striking illustration of the common disproportion between the bulk and the functional activity of a ductless gland tumour. It soon became apparent, however, that the clinical pictures of hypopituitarism and hyperpituitarism, so-called, are not simple contrasting opposites, and that there yet remains another component of anterior lobe function for consideration. For while there is indeed a striking contrast between the adiposity and hypoplasias of the subject with a chromophobe adenoma and the widespread hyperplasias of the subject with an acidophil adenoma—between Fröhlich's syndrome on the one hand, and of acromegaly on the other—there is in both the same failure or regression of the sexual organs and of the secondary sexual characteristics.

There are experimental indications that in the anterior lobe of the pituitary two hormones are formed—one growth-promoting and the other sex-maturing—and that their actions are in some measure opposed. It is at this stage of his argument that Cushing proceeds to describe a series of clinical cases, some personally observed, others culled from the literature, which present a characteristic and readily recognizable syndrome, and one he submits as the expression of the secretory activity of a basophil cell adenoma. Briefly, as seen in women, the syndrome has the following components. The patient is usually a young adult, who in association with amenorrhoea of abrupt onset develops an adiposity confined to the head, neck, and trunk. This adiposity is painful, and is associated with a cyanotic flushing of the face, the occurrence of purpuric spots, brownish pigmentation of the lower extremities, and numerous purplish cutaneous striae on trunk and thighs. There is commonly vascular hypertension, some erythraemia, excessive growth of hair on face and neck, osteoporosis, and progressive enfeeblement leading to death after a period of some five years. In males, sexual impotence replaces amenorrhoea. The females are commonly undersized; the males are sometimes tall and well built. Other symptoms are occasionally present, such as glycosuria and albuminuria.

Of the earlier reported cases it has to be admitted that in some instances there is no record of the presence of any abnormality of the pituitary body, but it is perhaps not surprising that a small adenoma should have escaped detection. On the other hand, adrenal hyperplasia seems to have been the rule, and some of the reported examples of the syndrome have been regarded as adrenal in origin, others as "polyglandular syndromes." As Cushing allows, even if the adrenal hyperplasia noted in some of his cases be secondary to

[1] *Bull. Johns Hopkins Hospital*, March, 1932, l, 137.

pituitary basophilism, it may still play a part in the production of the striking symptom-complex he describes. Further, whatever be the value of the experimental evidence that the sex-maturing hormone is a product of the basophil cells, it is clear that the present series of clinical cases throw no light upon the question, for in all of them a failure of sexual function has been noted. The cases do not give any clue to the possible functions of the basophil secretion, nor do they indicate that the basophil adenoma is in fact an actively secreting tissue.

It still remains to be established that there is any essential relation between the syndrome described by Cushing and the basophil adenomas found in some of the cases, and we have yet to discover whether these tiny lesions, so easily overlooked, may not be found in persons who have never presented the syndrome in question. Nevertheless, in describing so remarkable a clinical picture, and in drawing attention to its possible relation to basophil adenoma, Cushing has made a suggestive contribution to clinical medicine. He claims no more. Let us hope that those observers who will hasten to record similar cases will be as judicial and modest in their conclusions.

## VITAMINS AND HUMAN DIETS

The rapid development in knowledge of vitamins that has taken place during the last two decades has been of great interest to the medical profession, since it has altered completely our ideas regarding the composition of a satisfactory diet, has explained the causes of various important diseases, and has suggested possible reasons for the occurrence of various indefinite conditions of ill-health. The speed with which the subject has made progress has, however, rendered it extremely difficult to study, for the original literature has swollen to such a bulk that not only is its mastery a whole-time occupation, but much of it is obsolete almost as soon as it is published. Our profession therefore has reason to be grateful to the Medical Research Council for having published a new monograph, *Vitamins: A Survey of Present Knowledge*,[1] which gives a concise, clear, and authoritative account of this subject. The monograph has been compiled by a committee appointed jointly by the Lister Institute and the Medical Research Council. Dr. Arthur Harden has acted as general editor, and the committee includes most of the best-known authorities on vitamins in this country.

The report commences with a very interesting historical introduction, which shows that during the last twenty years of the nineteenth century evidence was accumulating which showed clearly that animals could not be maintained in health on a highly purified diet. The conception of a disease due to a deficiency was, however, unfamiliar, and there was a general tendency to explain these results as the effects of unknown toxic substances. The fact that normal health depends on the supply in the food of minute amounts of unstable organic substances was only clearly recognized about twenty years ago, but once this fundamental fact had been established the new science developed with extraordinary swiftness. The book gives a general account of the present state of knowledge regarding the three fat-soluble vitamins A, D, and E, vitamin C, and a group of half a dozen substances that are included under the general term of the vitamin B complex. The last two chapters are of special interest to the medical profession, for they are largely concerned with the prevalence of deficiency diseases in Western civilizations. The report points out that extreme effects of vitamin deficiency—such as scurvy, beri-beri, or xerophthalmia—are of rare occurrence in civilized communities, and that this fact has occasioned scepticism in some minds as to the importance of vitamins in human dietaries. On the other hand, rickets, minor derangements of bone formation, dental caries, and pyorrhoea alveolaris all appear to be caused by deficiency of fat-soluble vitamins in infancy, and these diseases are sufficiently obvious and common to make the importance of vitamins manifest. In this connexion it is interesting to learn that prevalence of osteomalacia and the consequent interference with reproduction was very possibly the reason for the extinction of some of the early Norse settlements in Greenland. "If this interpretation is correct," the authors remark, "the disappearance of this colony affords a clear case of extermination through failure to adapt the diet in such a manner as to supplement the lack of ultra-violet rays from the sun in those high latitudes. In Britain at the present day the adaptation of diet to climate is incomplete; osteomalacia is very rare, but bad teeth are almost universal, and rickets is a common disease." Another problem of great general interest is the relation between the supply of vitamin A and the resistance to infection. The addition of fat-soluble vitamins to the diet of pregnant women as a prophylactic measure against puerperal sepsis is discussed, and in an earlier portion of the monograph an account is given of the effect of vitamin A in preventing lesions of the spinal cord due to unknown toxins present in cereals.

The survey of knowledge regarding vitamins provided by this monograph suggests, indeed, that the subject is approaching a new stage of development. Attention was at first concentrated on the effects produced in animals by total deprivation of the various vitamins, and these results were correlated with certain extreme deficiency effects produced in humans in exceptional circumstances. The study of moderate vitamin deficiency in animals is now yielding results of much interest—results which promise to afford information of great practical importance for civilized communities living under more or less normal conditions.

[1] Medical Research Council. Special Report Series, No. 167. *Vitamins: A Survey of Present Knowledge.* London: H.M. Stationery Office. 1932. (6s. 6d. net.)

## MENDEL

In 1884 the abbot of the Augustinian monastery of St. Thomas at Brünn was mourned (to quote a contemporary obituary notice) as a benefactor of the poor, a man of the noblest character, a warm friend, a promoter of the natural sciences, and an exemplary priest. No one then supposed that there had died one of the great pioneers of science. Little care was taken to preserve his documents or to collect his correspondence. For this reason, and also because he was of a somewhat solitary disposition, his biographer has found that the collection of materials respecting his life has been a difficult task. No biography appeared until 1924, when Dr. Hugo Iltis published a volume in German. This has now been admirably translated by Eden and Cedar Paul, and appears as the *Life of Mendel*.[1] For Dr. Iltis it has been a labour of love. As a schoolboy at Brünn he read the classical monograph, and he was an undergraduate at the time of the rediscovery. He then resolved "to gather information regarding his life, and to contribute to keeping his memory in honour." Every item of information, both personal and scientific, that could be obtained was carefully collected, and, in spite of the unusually difficult nature of the task, the figure of Mendel shines clearly from these pages. It is an admirable and fascinating volume that Dr. Iltis has written, a volume well worthy to take its place amongst the biographies of men of science. Gregor Mendel was born of peasant stock, and his ardent love of study may well have been first directed towards science by the teaching of the elements of natural history at the village school. This was a most exceptional state of affairs at that period, and we learn that an indignant inspector reported that the parish priest was "chiefly responsible for this scandal." In his early years Mendel had a hard struggle against poverty, and it was only owing to the self-sacrifice of his favourite sister, who renounced her share of the family fortune, that he was enabled to continue his studies. Mendel never forgot her generosity. He was greatly attached to her children and provided for their education. Two survive, and are now engaged in medical practice. From them Dr. Iltis has gathered much information about their uncle, and has obtained some of his letters. A turning-point in Mendel's life was his admission, at the age of 21, to the monastery of St. Thomas. There, under a distinguished and enlightened abbot, he came under the influence of men of learning, for the monastery was the "centre of the spiritual and intellectual life of the country." For many years he found a vocation in teaching, and, at the same time, carried out his experimental work. He became abbot at the age of 45, and thereafter did little more botanical work. He continued his metereological observations, however, until a few days before his death. Dr. Iltis gives a full and unprejudiced account of the long-protracted controversy with the Government over the taxation of monasteries (for strengthening religious funds). He does not conceal his opinion that Mendel was mistaken in the attitude he took up. Where Mendel's contemporaries were content to admit the principle and evade its application, he would hear of no such compromise. He considered the law unconstitutional, and remained adamant to the end. It would be quite wrong, however, to consider him at this time a soured and embittered man. We are told that his taste for cheerful society was undiminished, and it was said of him, rather in the spirit of *The Christmas Carol*, that if anyone knew how to keep Christmas well it was the abbot Gregor Mendel. Mendel's scientific work is fully described, and his correspondence with Naegeli receives a complete chapter. Dr. Iltis is successful in relating succinctly Mendel's work to that of his predecessors, contemporaries, and successors. It was no accident that a botanist who was also a mathematician should have discovered the key to the study of heredity, nor was it an accident that during his lifetime his work received so little attention. Students of genetics owe a debt of gratitude to Dr. Iltis for an admirable account of the founder of their science, while the general reader cannot fail to be interested by the history of one who was not only a great man of science, but an attractive and arresting personality.

[1] *Life of Mendel*. By Hugh Iltis. Translated by Eden and Cedar Paul. London: G. Allen and Unwin, Ltd. 1932. (12s. 6d.)

## SURGERY IN ANGINA PECTORIS

During the last few years the possibility of relieving this painful cardiac symptom by surgical means has attracted a certain amount of attention. It is now generally believed that the pain of angina pectoris arises in the heart muscle. It is further possible to distinguish those cases suffering from precordial pain due to myocardial infarction, where an irreversible pathological change takes place, from those in which the pain is a transient symptom due to temporary myocardial distress but not associated with any permanent damage. That certain transient changes take place in the myocardium during an attack of angina is indicated by the electrocardiogram taken in this condition. Surgical measures aim at preventing the painful stimuli from reaching the central nervous system. The chief difficulty lies in the uncertainty as to which are actually the afferent paths, there being good reason to suppose that there is considerable variation in different people. Danielopolu, who has recorded his observations in a recent paper,[1] advocates cutting the cervical sympathetic and its connexions, but he leaves the inferior cardiac nerves and the rami of the second, third, and fourth dorsal roots. He holds that removal of the stellate ganglion is harmful. The reason for preserving these connexions is that the fibres causing dilatation of the coronary arteries run through them. One of the most important advantages which he claims for surgical measures is the removal of the "pressor reflex." He maintains that every attack of angina is associated with a rise in blood pressure, which increases the load on the heart at an unfavourable moment. In England less emphasis is laid on this phenomenon, although it does admittedly occur in certain cases. Taking these points into consideration, the question arises as to how far the removal of these painful symptoms is advisable. If one could be sure that in a given case vasomotor spasms of the coronary arteries caused the anoxaemia, surgical intervention, other

[1] *Résultats du Traitement Chirurgical de l'Angine de Poitrine*. By D. Danielopolu. Bucarest: Impr. Cultura. 1932. (Pp. 285; 8 figures.)

means failing, might be adopted. But where the coronary arteries are atheromatous or syphilitic obliteration of their mouths is present, the advent of pain is a warning that the blood supply to the muscle is inexorably curtailed. The pain is thus an indication of acute myocardial distress and protective in its purpose. Without it the heart muscle may become gravely involved and perish. Moreover, it is not the pain that kills, but the anoxaemia in the ventricular wall. In these circumstances it may be unwise to interfere with a protective signal, and better to guard the patient from giving his heart more to do than it can manage. If the pressor reflex were present in every case, its abolition would be an advantage, but it is doubtful how constantly it appears. Although the understanding of the mechanism of angina pectoris has progressed much in the last few years, a good deal still remains to be learned. The paths of the afferent fibres from the heart are still uncertain, and little is known about individual variations in different people. No means are available for eliminating these peculiarities apart from operation. The results of operation are apparently good in some cases, but unexplained fatal results have often occurred. So far the matter is in an early experimental stage, and can only be undertaken with caution. But it seems possible that it may be of value in certain related cases in which the heart muscle appears to be fairly sound, the pressor reflex is present, and the sensitivity of the central nervous system high.

## PROBLEMS OF HAEMOPHILIA

Haemophilia is a rare condition, but only too often the term is used as a diagnosis for some state in which bleeding occurs. As a result research into the disease is almost at a standstill, and there is a paucity of actual knowledge about its fundamental features. What is needed is some method of diagnosis which does not depend upon outward symptoms, and Dr. I. N. Kugelmass[1] has recently claimed to have found this in what he calls the index of clotting function. He summarizes the criteria which he considers both necessary and sufficient for the diagnosis of haemophilia under five headings: hereditary in origin, limited to males, tendency to repeated bleeding (spontaneous and traumatic), prolonged clotting time with a normal bleeding time, and deficient blood clotting function. Analysing these factors in more detail Dr. Kugelmass, from a survey of previous work, reaches the conclusions that the defect in haemophilic blood is delay in the conversion of prothrombin into thrombin, and that in this condition the platelets, although present in normal or increased numbers, fail to disintegrate normally. He points out that prolonged clotting time alone is not pathognomic of haemophilia, since it also occurs in sepsis, jaundice, polycythaemia, and nephritis ; and in attempting to elucidate the problem he has carried out exact analysis of the different elements of the blood concerned in clotting—such as prothrombin, fibrinogen antithrombin, and platelets. The index of clotting function constitutes the ratio of the concentration of those substances tending to cause clotting over those tending to favour bleeding. Haemophilic blood is always characterized by a clotting index which is less than one-tenth of the normal, which is 0.5. Hence any blood with an index less than 0.05 may be characterized as haemophilic, and such laboratory diagnosis becomes quite independent of the criteria necessary for the diagnosis of the disease. Bleeders of all kinds have been investigated in this way, and a careful study of each case along general lines associated with the laboratory diagnosis has reduced the number of true cases of haemophilia to eight, reported in detail in the paper under review. A great advantage of the laboratory test here described is that the relative merits of various therapeutic measures can be carefully tested. No method can be considered of value unless it increases, temporarily or permanently, the index of clotting function, and under this stringent test most methods completely fail, leading to the conclusion that " the course of the disease cannot be fundamentally altered." Nevertheless there are some methods of treatment which have a certain value. For example, the index of blood clotting function is increased many times by transfusion of blood from a donor ; but such an increase lasts for only forty-eight hours, and repeated transfusions are necessary for the maintenance of a higher level of clotting function. From the clinical standpoint transfusion controls the symptoms of haemophilia for a week, and even small amounts (15 to 30 c.cm.) of blood arrest haemorrhages. Serum injected in a haemophiliac is not very effective in controlling haemorrhage, but fresh serum from man, horse, or rabbit, given intravenously, brings the clotting mechanism to normal within forty-eight hours and maintains it at a normal level for a week. Protein sensitization checks mild bleeding, and locally the most effective coagulant is fresh human blood soaked in cotton-wool applied after the removal of useless clots. Dietetic treatment applied to genuine cases of haemophilia has no beneficial effect, although for what Dr. Kugelmass calls " non-haemophilic bleeders " any diet or serum therapy seems to produce good results. He is unable to support the claims for ovarian extracts and female sex hormones in the treatment of haemophilia recently made on the grounds that something must be present in the female blood which protects women from the malady. The daily injection of these substances did not alter the index of blood clotting function in the least.

[1] *New York State Journal of Medicine*, June 1st, 1932.

## ABNORMAL OBESITY

Dr. Ejnar Jarlöv, in a recent article on clinical types of abnormal obesity,[1] has attempted to differentiate obesity into the greatest number of clinical pictures, and has presented a purely descriptive classification, which has much to commend it. A great deal of the clinical work on obesity will have to be repeated. Many workers, as pointed out by Poulton, have reported no data of measurement of their patients other than the weight ; others have adopted one of the existing classifications, none of which is satisfactory. Two main methods have been used. The anatomical method describes the distribution of the fat—Günther's typus cervicalis, humeralis, abdominalis, etc., and Bauer's division into such categories as the Rubens type, the " breeches " type, and so forth. The other method is

[1] *Acta Medica Scandinavica*, Supplementum xlii, Copenhagen, 1932.

on a pseudo-aetiological basis, and the most extreme example of this is Pende and Poggio's division into fourteen groups, each of which represents some departure of a ductless gland from its normal function. The anatomical classification is not very apt, and the attempts at an aetiological classification rest on too flimsy a scientific basis—no two authors seem to agree, except in the well-marked cases of such diseases as myxoedema, Fröhlich's syndrome, and the rare cases of purely gluttonous obesity. Jarlöv has studied 116 out-patients, and they fall into three main categories: the hypertrophic, the myxoedematoid, and the lipomatoid. The first is characterized by a diffuse adiposity, which gives the patient the appearance of "bursting with fat." In this group there is a tendency to osteo-arthritis, and cardiovascular degenerations. The suggested aetiology is over-indulgence. Important subgroups are: the plethoric, which is self-explanatory, and the uratic, associated with gout and nephrolithiasis. Subgroups of less frequent occurrence are: the acromegaloid—virile, Amazon-like women; the climacteric; the asthenic—a type associated with an anxiety and fatigue complex; the cerebral—possibly post-encephalitic; and the eunuchoid. In the second or myxoedematoid group there is a diffuse adiposity beginning at an early age, with an appearance suggesting mild myxoedema, although the basal metabolic rate is normal. Several subgroups are described: the oedematous type, characterized by a persistent slight oedema of the lids and legs, suggesting nephritis; the adiposalgic, in which areas of panniculitis dominate the picture; and the pasty type, in which there is a striking pallor. In the third or lipomatoid group there is a generalized adiposity with localized, often symmetrical, lipomatoses, frequently affecting the lower limbs and ending abruptly at the level of the malleoli. These areas are not affected by treatment. Jarlöv has purposely excluded cases of recognizable endocrine disease—that is, cases which fulfil the accepted criteria for such diseases—and, except in the hypertrophic type, he has made no suggestions as to aetiology. He hopes that the initial separation of cases into similar groups may ultimately lead to some aetiological clues. It seems doubtful whether all his types will need to be retained, as some of them are presumably incidental: both the greyhound and the bulldog may become obese from a common cause. His types are all clearly recognizable, although it is a grave commentary on our knowledge of obesity that a purely descriptive classification may prove more acceptable than the aetiological ones of the day. Jarlöv's paper would have been of more value had he included the heights, weights, and other measurements of his patients.

## ALIMENTARY DIATHESIS

The conception of the "man-environment unit" as a fundamental in the consideration of any disease process has already been referred to in these columns.[1] Professor George Draper has urged that observations must be made on the four panels of the personality—morphological, physiological, immunological, and psychological. He has claimed that without such a picture only an incomplete view of the processes at work can be obtained. In a recently published paper[2] his studies are continued by an analysis of the family histories of thirty-two cases of gastric and duodenal ulcers, and a similar number of cases of gall-bladder disease. This is the genetic angle. Further observations from what are spoken of as the anthropophysic and anthropopsychic angles are made upon the ulcer cases, and then are correlated with some much more speculative considerations of the gall-bladder cases. The detailed family histories which have specially dealt with physical type and actual symptoms in the more immediate relations have shown that the families of the ulcer patients contained more males than females, and that the reverse holds with respect to the gall-bladder families. In the former the physical build has approximated to the asthenic type; in the latter, individuals of the short, stocky type have been commoner. The physical features specially noted in the ulcer families have been general alertness of the facies, sometimes bordering on defiance, low antero-posterior diameter of the chest, narrow subcostal angle, and short extremities with long digits. Alterations in the jaw measurements and constant variations in the placing of the teeth were also marked in the families of ulcer patients. Detailed psychological investigation of the patients and a picture of the families' general reactions were noted. Draper and Touraine conclude that in their cases of peptic ulcer an emotional reaction of fear had been present, and that this had affected the individual in two ways. First, a long-continued and unconscious strain had been borne, and they picture this as leading to slow ulcer formation. They suggest that this arises in the "peptic ulcer male" on account of his failure to acquire full masculine reactions, and that the "ulcer female" is one whose urge towards executive ability has been hampered by her feminine build, which masks a masculine outlook. The conception of masculine and feminine components in every individual is not new, but the idea of how this may alter the reactions of the autonomic nervous system and actually originate organic changes is highly suggestive. The second factor is an immediately precipitatory emotional crisis followed by increase in symptoms, possibly by haemorrhage. In this connexion Crile's observations on recurrent hyperthyroidism and recurrent ulcer, and Charcot's suggestion that the *crise noir* might sometimes be hysterical, are interesting. A good deal of scepticism will naturally greet the authors' conclusions. They recognize that much is founded upon material which has not allowed of measurable certainty. There still remains a feeling that, despite the comparative infancy of the branches of science they are cultivating, their material does suggest that dogmatic cleavage between functional and organic disease may cease to be made in the not too distant future. If their conceptions are suggestive of a return to the old idea of diathesis, this return would connote a fuller consideration of the adaptations of the individual and of the material with which he has been endowed. To the objection that an already complicated clinical picture might be further obscured they would reply that it offers hope of much more satisfactory final results.

[1] *British Medical Journal*, 1930, i, 448.
[2] Draper and Touraine: *Arch. of Int. Med.*, 1932, xlix, 616.

We regret to announce that the death of Dr. Gustave Monod, F.R.C.P., who for many years has been our French correspondent, took place recently at Vichy.

# THE SECTIONS

## SUMMARY OF PROCEEDINGS

(*Concluded from page 325*)

### COMBINED SECTIONS OF MEDICINE AND RADIOLOGY

*Friday, July 29th*

DIAGNOSIS OF LUNG DISEASE

A combined discussion on radiology in the diagnosis of disease of the lung was opened by Dr. STANLEY MELVILLE, his paper being printed in last week's issue at page 283. Professor A. J. HALL was in the chair.

Dr. R. A. YOUNG paid a tribute to the great and increasing value of the aid afforded by radiology in the diagnosis and treatment of pulmonary tuberculosis. He thought that exaggerated claims were sometimes made in regard to its value in diagnosis in this disease. It should be looked upon as complementary to and not competitive with ordinary clinical examination. He suggested that it was unfair to ask a radiologist to report on a film without some information as to the history and clinical condition of the patient. Radiology often gave most valuable evidence as to the presence of disease and as to its extent, but he strongly deprecated accepting a negative *x*-ray film as conclusive, since clinical examination sometimes established the existence of disease in such cases. He did not like the use of the term "infiltration" in the sense suggested by Dr. Melville, and preferred to describe the appearances as "deposit," with a qualifying adjective, such as "recent" or "old." He was chary of accepting pathological conclusions based on radiological appearances. He was also dubious of *x*-ray evidence in regard to quiescence or activity of lesions in the lungs.

Dr. F. G. CHANDLER, speaking of bronchiectasis and lung abscess, said that radiology had perhaps shown its greatest advances in these two conditions. Before the introduction of iodized oil the diagnosis of bronchiectasis was difficult and often impossible. In addition to the case with which a diagnosis could be made by lipiodol injections, much valuable information could be had as to the integrity or otherwise of the opposite side. Without *x* rays no efficient control during treatment was possible. In lung abscess the *x*-ray picture was invaluable in the differential diagnosis of that condition from bronchiectasis and new growth. Lipiodol usually stopped short at the abscess cavity, which could thus be distinguished from non-obstructive bronchiectasis. In the differential diagnosis between abscess and new growth, radiography should not be deferred, for the later inflammatory reaction around new growth made the diagnosis difficult. It was common for pus to be coughed up in cases of lung abscess, whereas in new growth obstruction of the bronchus was usually so complete as to make this impossible. Dr. L. S. T. BURRELL, speaking of collapse therapy, said that although *x* rays were of great value as a means of control the symptoms and condition of the patient were more reliable. To let out air from a chest because the *x*-ray film showed mediastinal displacement was wrong if the patient's symptoms did not warrant it. Radiology was useful in localizing adhesions before thoracoscopy and cautery, and invaluable before thoracoplasty in showing the amount of fibrosis and displacement of the trachea. Dr. J. DUNCAN WHITE (Edinburgh) said that lipiodol might be introduced by four routes—supraglottal, crico-thyroid, nasal, and bronchoscopic. A preliminary *x*-ray photograph should always be taken. He preferred the nasal route as a routine, and it was always best in upper lobe lesions. Failing this—and it was difficult to achieve in some patients—he used the crico-thyroid route. It was hard to overestimate the value of lipiodol, especially in the diagnosis of bronchiectasis sicca. In lung abscess diagnosis was often difficult, and co-operation between radiologist and clinician was essential. The extent of chronic sinuses in the chest wall was well shown by lipiodol, and the latter was useful as a method of control in artificial pneumothorax, phrenicotomy, and thoracoplasty. Dr. E. W. TWINING (Manchester) drew attention to the need for standardization of technique, especially in industrial work, and for standardization of nomenclature, particularly with regard to tuberculosis. In this disease many workers, he thought, were too fearful of missing small hypothetical lesions. The origin and spread of tuberculous disease took place by a series of bronchogenic lesions, which were extensive enough, even in early cases, to be made out by screen examination. He believed that the detection of carriers and the examination of contact cases by means of the screen examination would play an important part in the fight against tuberculosis.

Dr. J. V. SPARKS read a paper on pneumonoconiosis in asbestos workers, and showed several slides. There were, he said, 2,000 workers in this country exposed to asbestos dust. The main symptom was dyspnoea; cough was variable and often slight. Chest radiograms were now taken of all workers before they started. Prophylaxis was extremely important because the disease was progressive, even if the workers were removed from contact with asbestos. Asbestos bodies were found in the alveoli of the lung; when found in the sputum they were not necessarily evidence of existing pneumonoconiosis. The radiological appearances in the later stages were typical, and consisted of limitation of movement, indistinctness of outline of the diaphragm, and thickening of the pleura; the cardiac shadow was ill defined, but not, as a rule, displaced. Professor S. LYLE CUMMINS (Cardiff) expressed regret at the absence of Dr. Steuart of South Africa, and paid a high tribute to his work on dust diseases. He felt less diffident in taking his place because he had had an opportunity of visiting Dr. Steuart and of seeing his work. Speaking of radiology in relation to silicosis, Professor Cummins said that too much reliance must not be placed on the radiographic findings alone. Although the presence of mottling was common in silicosis, it might be due to other conditions. The presence of diffuse shadows often signalled the appearance of tuberculous disease. The speaker showed microscopical sections and films in which silicotic and tuberculous lesions existed side by side. If, as he thought possible, miliary tuberculosis was capable of healing, the fact was important in differential diagnosis. He then demonstrated *x*-ray films in which large, dense, diffuse shadows—known as "cricket-ball shadows"—were visible in the lung. They were probably due to old healed tuberculous lesions which so obstructed the lymph flow that coal-dust was held up in a large area of lung tissue.

Dr. STANLEY MELVILLE, replying, expressed the pleasure it had given him to have as chairman Professor Arthur Hall, whose work on occupational diseases of the lung was so well known. He wished also to thank Professor Lyle Cummins for his kindness in taking at short notice the part in the discussion that had been allotted to Dr. Steuart of Johannesburg. He stressed the importance of regular attendance at necropsies by the radiologist. He thanked Dr. Young for his kindly criticisms. The latter had made a point of the necessity for the radiologist to be in possession of the clinical history before attempting

to report on a radiogram, and the speaker suggested that this most salutary advice might be given to the clinician, who frequently thought it sufficient to send on his request form the words "*x* ray of chest" only. Throughout the whole discussion the value of team work had been stressed, and this was all to the good.

## SECTION OF SURGERY

*Friday, July 29th*

### Acute Intestinal Obstruction

With the President, Lord Moynihan of Leeds, in the chair, a discussion took place on the above subject.

Mr. Reginald M. Vick presented the results of his investigation of 6,892 cases of acute intestinal obstruction treated at the surgical centres of Great Britain for six years from 1925 to 1931. The details of the investigation were ably illustrated in graphic form. It was shown that gall-stone obstruction occurred most commonly between the ages of 50 and 70, that obstruction due to carcinoma was commonest in the sixth and seventh decades, and that adhesions and internal strangulations were among the dangers of early adult life. Practically all the cases of idiopathic intussusception—940 out of a total of 989—occurred before the age of 10, and most of them within the first two years of life. The age incidence of other types of obstruction were clearly shown. The mortality rates in this series of cases were compared with Mr. Souttar's figures of the results of treatment of the condition at seven large London hospitals from the years 1920 to 1925. It was shown that the mortality rates had been materially reduced for intussusception and external strangulated hernias. The geographical distribution of the cases was very interesting. Mr. Vick further showed from his tables details of the site of obstruction and of the duration of the disease before operation. Brief details of operative procedures were also included. In conclusion, Mr. Vick said that if they accepted the contention that by early diagnosis and treatment these patients might be saved from a miserable death, then these mortality rates were too high.

Sir Henry Newland (Adelaide), opening the discussion, referred to Mr. Vick's statistical tables. He said that it was obvious to every surgeon that delay in recognizing acute obstruction was the main factor in determining the death of the patient. He could not conceive how any future research or discovery could expedite a correct diagnosis in the earliest period of the condition. Unfortunately the acute symptoms at the outset were common to other abdominal diseases, but their extreme intensity with the absence of signs of visceral inflammation or injury should point to the possibility of acute obstruction. The speaker discussed the diagnostic value of enemata and the danger of administering aperients. Post-operative adhesions were not an uncommon cause of acute obstruction, particularly after prolonged manipulation, as in removing a difficult appendix. Gentle handling in all abdominal operations should therefore always be the rule, and drainage tubes should not be used for prolonged periods. Lowered mortality, the result of early operation, had shown itself in the case of acute intussusception. Acute intestinal obstruction due to impacted gall-stones was fully considered by Sir Henry, and he concluded by saying that jejunostomy was a better procedure than lateral anastomosis in cases of late intestinal obstruction in which the mechanical obstacle had been treated.

Sir W. I. de Courcy Wheeler (Dublin) confined his remarks to post-operative obstruction and acute colonic obstruction, the result of new growth. Early recognition of post-operative obstruction occurring after an interval of weeks or months did not, as a rule, give rise to any difficulty; obstruction occurring within a few days of a simple abdominal operation was a different matter. The possibility of the condition being due to so-called ileus or to adhesions between loops of small intestine had to be considered. Both conditions were often found. Only rarely was operation recommended in the first twelve hours. It was usually after the first aperient that the condition manifested itself. When both aperient and enemata had failed to produce results the patient should be kept at rest and the stomach contents aspirated through a Jutte tube. During this period normal saline and glucose injections should be given. If at the end of twelve hours the pulse rate was stationary, the tongue was moist, and the stomach contents were still bile and mucus, an enema would most probably produce a result within twenty-four hours. The value of administering hypertonic saline to overcome the toxaemia and produce peristalsis was fully discussed. Sir William referred to Gosset's figures, which showed a fall in the mortality rate from 50 to 11.1 per cent. when hypertonic saline had been used intravenously. Anti-gas-gangrene serum had not produced convincing results, and though *B. welchii* flourished in cases of intestinal obstruction there was no proof that their toxins were the lethal agent in acute obstruction. When all these methods failed the speaker gave a spinal anaesthetic on the operating table. If there was no action of the bowels operation was performed. The choice of high or low enterostomy or relief of the obstruction depended entirely on the case. Since the Jutte tube acted in a manner similar to a high enterostomy, drainage of a distended loop of gut in the left iliac region was advantageous. The speaker said that post-operative obstruction could be anticipated and prevented to some extent by gentle handling. The Oschner-Sherren treatment of acute appendicitis seen on the third day eliminated the risk of post-operative obstruction in these cases. The majority of cases of post-operative obstruction followed rough handling of the small intestine during the removal of an adherent appendix. Attempts at removing the appendix through high abdominal incisions were to be deprecated. Finally, Sir William considered cases of acute intestinal obstruction for carcinoma of the colon. Early diagnosis prevented its occurrence. It was emphasized that early symptoms of cancer of the colon were often referred to the upper abdomen. This must be borne in mind to avoid overlooking an early colon growth. When considering treatment, it must be remembered that acute intestinal obstruction in cases of carcinoma of the colon did not necessarily mean that the growth was inoperable.

Professor A. H. Burgess (Manchester) said that during the present century there had been an improvement in the mortality of abdominal catastrophes in general, but in the case of acute intestinal obstruction there was a marked lagging behind. From Mr. Vick's investigations a total mortality rate of 26.2 per cent. included a large number of cases of external hernia and intussusception. The diagnosis in these cases was, as a rule, easy, and therefore the mortality rate was low. If one excluded these it was seen that the real mortality rate of the cases in which diagnosis was not obvious was 40 per cent. Furthermore, it was pointed out that intussusception was not primarily a form of intestinal obstruction. The importance of early diagnosis was stressed, and it was pointed out that the lack of physical signs in early cases often caused the condition to be overlooked. Textbooks until recently had only described the late cases, and had neglected to emphasize the importance of early diagnosis. The absence of physical signs in the early stages was to be taken as a definite diagnostic point. The fundamental

and extremely important distinction between simple obstruction and strangulation obstruction was discussed. The severity of symptoms and signs depended upon the site of obstruction, the presence of strangulation, and amount of mesentery involved. Aids to diagnosis were then discussed, and the speaker said that distension varied inversely with the vomiting, except in sigmoid volvulus. Steadily progressive abdominal distension was an important sign of obstruction, and always called for surgical intervention. To wait until distension was general was to render the operation much more difficult and to make the chances of recovery much less. Auscultation of the abdomen was a neglected method of physical examination, and the use of the sigmoidoscope in suspected cases of carcinoma of the colon helped in prognosis. The use of plain radiograms, where possible, was often extremely useful for diagnosis of the site of obstruction. As regards site and nature of obstruction, in small-gut obstruction strangulation was five times more common than in the large gut. The possibility of carcinoma being the cause of obstruction in the large gut was nine to one, whereas in the small gut the chances were seventy to one against growth. In late cases he recommended caecostomy, and said that though there were objections to doing this without exploration, they were overshadowed by the results.

Professor D. P. D. WILKIE (Edinburgh) said it was seldom that the general practitioner delayed in a case of obstruction. In the speaker's opinion the delay had been in calling in the doctor. He issued a plea for education in this direction. Cases of obstruction were divided into three groups: (*a*) Simple obstruction—for example, due to a gall-stone ; the most important factors here were loss of fluid and particularly loss of chlorides. (*b*) Strangulation. Most of the deaths in this group were due to shock, absorption of toxins, and the permeation of the bowel wall by bacteria. (*c*) The closed loop. This was seen in cases of obstructed appendicitis and the strangulated loop of a hernia. Here decomposition occurred, leading to tension, gangrene, and perforation. The urgency of obstruction in appendicitis was strongly emphasized. Treatment must be prompt but not precipitate; fluids and chlorides must be given liberally before operation and the patient's stomach washed out. The surgeon should be thoughtful and gentle.

Dr. ROSCOE GRAHAM (Toronto) said that the mortality rate in these cases had hardly improved in Toronto. He referred to the 42 per cent. mortality rate for obstruction of the left colon, and he believed that this was due to the treatment of the growth and the presence of obstruction. In cases where the obstruction had been treated first the mortality rate dropped to 6 per cent. He agreed with Professor Burgess about the performance of blind caecostomy, and referred to points of technique in its performance. The administration of chlorides was imperative, and should be continued for several days. Thousands of c.cm. of saline were necessary in these cases. He agreed with the use of a stomach tube and said that an accurate estimation should be made of the fluid loss and intake. He advocated the routine use of *x* rays in cases of intestinal obstruction admitted to hospital when this was thought possible. Mr. ZACHARY COPE thought that the mortality in these cases could be improved. Referring to the cause of this high mortality, he mentioned the ignorance of the public and the many misconceptions as to the seriousness of abdominal pain and acute obstruction. Pain in the abdomen of more than six hours' duration, associated with persistent vomiting, required the opinion of an expert. Surgeons themselves did not realize that latent shock existed. There was a period in cases of intestinal obstruction in which shock, though present, was not obvious. The systolic pressure in these cases might be normal, but the pulse pressure was always extremely low. An easily altering blood pressure, as when the patient's position was changed, was evidence of this latent shock. Patients should always be prepared as if they were suffering from shock, although they might not look it. Mr. HERBERT J. PATERSON stressed the importance of early diagnosis. Though the rigidity of a colic might be very intense a warm hand and gentle massage would as a rule overcome it. When an aperient was given in cases of acute intestinal obstruction the stomach expelled it. He had used this fact as a diagnostic test. He did not agree that *x*-ray examination was necessary, and said that these patients as a rule would not stand it. Rest in bed was of paramount importance in preparing the patient before the operation. Resection or anastomosis should not as a rule be done, but drainage only established. Miss EMILY C. LEWIS gave an account of her investigations into sixty-two cases of post-operative intestinal obstruction, and said that the most important factors in the production of this condition were the use of a drainage tube, the extent of the operation, and repeated surgical intervention.

Mr. E. T. C. MILLIGAN said that the duodenal tube and routine radiograms were important advances. The former was swallowed at the outset and remained strapped to the cheek till anxiety had passed. It revealed unsuspected residual stomach contents as a catheter did residual urine. The colour of stomach contents indicated the origin—colourless and gastric, green and duodenal, or the foreboding brown and intestinal. Thus, aspiration at half-hourly intervals showed the progress of the case for better or for worse. Aspirated contents were all returned to the rectum. Patients should not be sent to operation without the tube for aspiration. When evidence showed relief of obstruction, saline and remedies could be introduced comfortably through the tube. It had been used for cure and comfort of patients with obstruction in hopeless malignant disease of the peritoneum, serving the same purpose as high jejunostomy. The operator should know beforehand whether large- or small-gut obstruction existed and the site in the large gut. Routine radiograms gave this information. They must, however, be interpreted with the clinical picture. Radiograms had revealed unsuspected intestinal obstruction in abdomens in which distension was thought to be due to tuberculosis. The absence of dilated small intestines had helped in the recognition of complete pyloric stenosis. Professor DE QUERVAIN (Bern) said that in post-operative obstruction there was, as a rule, no hurry in operating since there was no risk of gangrene. Auscultation was an important method of investigation, and *x* rays were useful as an adjunct to clinical examination. Pre-operative rest was also important. Operation should be performed in all cases of acute obstruction on the first suspicion, and the surgeon must not await the typical clinical picture. Drainage should be avoided when possible, but when there was doubt drainage should be done. It was better to have a successful result after a number of operations than to have a death after a brilliantly performed one-stage operation. Professor FINSTERER (Vienna) said that the two factors which would improve the mortality were the prevention of falling blood pressure by the administration of saline, pituitrin, and ephedrin, and the use of local anaesthesia during the operation. Local anaesthesia of the abdominal wall and a very short ether or gas narcosis for the discovery and delivery of the site of the obstruction were advised. Resection of the gangrenous intestinal loop was then performed under mesenteric anaesthesia. By the use of these methods the speaker's mortality rate had dropped to 16.3 per cent. In advanced cases of colon obstruction he considered a two-stage resection the best treatment, since there was always a

danger that in spite of caecostomy a stercoral ulcer might perforate. Referring to gangrene of the small intestine, Professor Finsterer said that when obstruction was high a one-stage resection was necessary. In the lower ileum, however, a two-stage resection was possible: he did not favour the use of spinal anaesthesia in this condition owing to the fall of blood pressure. Professor G. Grey Turner (Newcastle) said that there was room for improvement in the teaching of the student concerning the importance of early diagnosis in acute abdominal catastrophies. These cases were usually seen and dealt with at night, when the students were not available, and, furthermore, they were often left in the hands of a very junior surgeon. He did not think the education of the public would help until the education of the doctor had been made sure. The careful observation of these cases over a period of time was of great importance in arriving at a diagnosis, and until there were more beds available for such observation the practitioner was not keen on sending doubtful cases to hospital. He agreed that local anaesthesia was preferable, and referred to the stomach tube as an important method of diagnosis and after-treatment. Sir Henry Newland, in reply, hoped that when further statistics were desired the hospitals of the Empire would be invited to send their results. Professor Burgess remarked that though he did not place radiography before clinical methods he was of the opinion that it was going to be an extremely useful adjunct. Professor Wilkie said that the figures from the British Empire and foreign countries continued to be the same. He again emphasized the enormous importance of the early diagnosis of the cases, and felt that the later signs of the disease should not be taught.

## SECTION OF PHARMACOLOGY AND THERAPEUTICS

*Thursday, July 28th*

### Outlook of Research in Therapeutics

With Professor R. Stockman (Glasgow) in the chair, the President, Professor J. A. Gunn (Oxford), opened a discussion on the outlook of research in therapeutics. He said that though the present century had shown much important progress, advance in therapeutics had been extraordinarily slow in many respects. The prescribing of useless drugs was costly, and he cited sarsaparilla as an instance. Recognition of valuable remedies, on the other hand, had often been tardy. He reviewed the causes for the slow advance in chemotherapy in this country and considered a number of possible improvements in teaching and research into therapeutics. Treatment should be taught just as thoroughly as diagnosis or pathology, and some provision should be made for more chairs of therapeutics at the universities.

Professor V. E. Henderson (Toronto) said that one of the main difficulties was to get pharmacologists to teach therapeutics. Much current pharmacological teaching gave an incorrect idea of the actual effects of drugs when given to man in therapeutic doses. He referred to morphine as an example, and then illustrated his point by recounting his own work on hexamine. Team work was essential for therapeutic advance, as also was the proper use of available material.

Dr. R. Hutchison spoke of therapeutics as an art, and of the great difficulties confronting investigators. Drugs were not the only agents used by practitioners in treatment—the psychological element was extremely important. Because a drug could not be shown to have any action in laboratory experiments it did not necessarily mean that it was therefore valueless. Investigation in hospital was hampered by the "clinical conscience." To make therapeutics a subject in the final examination was the only way to advance interest in it. He deplored the narrow, national outlook on research. Professor E. Mellanby (Sheffield) said that he regarded drugs as quite as valuable as psychotherapy. He thought that therapeutics was very closely related to advance in their recognition that chemical and physical errors underly disease. If a clinical observation did not lend itself to experimental investigation the subject remained precisely where it was and no further progress was made. He had several constructive suggestions to make for hastening advance in our knowledge of treatment. Dr. J. H. Burn agreed with all that Professor Mellanby had said, and stressed the importance of adequate laboratory training. He felt that advance in treatment in the last twenty-five years had been astonishing. Professor F. L. Pyman (Nottingham) referred to the work of the Chemotherapeutic Committee of the Medical Research Council.

Professor A. J. Clark (Edinburgh) said that he agreed with the great importance of suggestion in treatment, but this should not be emphasized to patients themselves. He wondered whether greater advances in treatment should not have been made, and he compared the slow development in therapeutics with the rapid strides made in the development of wireless. Team work on a large scale might detect finer differences in the therapeutic value of drugs; the individual worker could not cover the necessary ground. Pharmacology was a link between the fundamental sciences and medicine, both in research and in teaching. Professor F. R. Fraser pointed out that clinicians especially welcomed remedies that directly affected disease processes and altered their natural course to abort them or cut them short. Such were the great advances in therapeutics, and they were the result of researches in all branches of science—physics, chemistry, biology, physiology, bacteriology, and immunology. The pharmacologists were at present dealing mainly with the action of remedies that helped patients to overcome disease—for example, analgesics, anaesthetics, cathartics, coronary dilators, etc.—substances of relatively less importance than those that directly influenced disease processes. In his opinion pharmacologists must widen the scope of their investigation in the future if pharmacology was to progress as a science. Professor Fraser explained the functions of the Therapeutic Trials Committee of the Medical Research Council. A manufacturer could apply to the Council under certain conditions to have clinical trials of a new remedy. If the laboratory investigation had been sufficient to indicate that the substance could be used clinically without further experiment and the preliminary trials were sufficiently encouraging, the Therapeutic Trials Committee invited one or more clinicians with suitable training and experience to conduct the requisite trial. If the laboratory investigations were not deemed sufficient, the remedy was submitted to the Chemotherapeutic Committee for further trials before it was considered for clinical investigation. The detailed reports of the clinicians were submitted to the Therapeutic Trials Committee, which reported the result to the manufacturer. This report was issued by the Council without the names of the clinicians being published, and the manufacturer might utilize the report, and the Council might give permission to the clinicians to publish their investigations in the usual way. By this procedure it should be possible for authoritative information on new remedies to be available both for the manufacturers and for the medical public. Professor W. J. Dilling (Liverpool) thought that it was important to use the material in municipal hospitals to greater advantage for therapeutic investigation. Professor D. Campbell (Aberdeen) said he felt that opportunity for therapeutic research must be improved. It was important for a man engaging in special work to have a training in both physiological and clinical

methods. There was at present very little opportunity for a pharmacologist to do therapeutic research. Professor R. Stockman (Glasgow) referred to advances in other subjects. He considered that minor ailments to-day were well treated, and thoroughly agreed that a trained pharmacologist used much fewer drugs than the average clinician. He considered that a student's training in therapeutics should come later in his medical course than at present, and that many of the existing textbooks should be done away with, as they were of no value in practice. Pharmacology by itself was a barren subject, and every teacher should have a clinical appointment and have control of beds, particularly in the municipal hospitals. He must also be supplied with a regular staff. In reply, Professor Gunn said that he considered Dr. Hutchison had not been quite fair in his criticism of *ad hoc* research, and he referred to the introduction of salvarsan and recent improvements in the treatment of malaria. He thought that the pharmacologist was quite aware of the value of suggestion, and while he agreed with the utility of placebos, he saw no reason why cheap ones should not be used.

### Influence of Copper and Manganese on Iron Therapy

Dr. J. H. Sheldon (Wolverhampton) then read a paper on the influence of copper and manganese on the therapeutic activity of iron. He reviewed the recent work, which showed that in addition to iron traces of many other metals are often present in animal tissues, and pointed out the advantages which the use of spectroscopical analysis had brought to investigations in this field. The functions which these elements exercised in the body was not yet clear. Copper and manganese had been regarded as essential for normal physiological activities. He described in some detail the recent work on the effects of copper administration in anaemias. His own work had shown the importance of copper in the animal economy ; at birth the infant was provided with a large reserve of it in the liver. Copper and iron were the only metals stored as reserve material in the liver during foetal life, but the amount stored was subject to a very wide degree of variation. As there was only a small amount present in milk the infant depended upon the store to prevent the development of nutritional anaemia. It was impossible as yet to say whether the anaemia of adults, characterized by a haemoglobin deficiency, was connected with shortage of copper in the body as well as of iron. Manganese was chiefly present in the liver, kidneys, pancreas, and suprarenals. There was no reserve supply of manganese provided during foetal life, and the speaker considered that this was very strongly in favour of the view that manganese was not concerned with the formation of haemoglobin.

In the discussion which followed, Dr. J. F. Wilkinson (Manchester) said that the majority of investigations on the value of copper and manganese had been done upon animals and had given rise to highly controversial results. The conditions of animal experiments did not correspond to those of the human anaemias except in the case of anaemia due to blood loss. In the few observations made upon the human adult there had usually been inadequate control. The value of these metallic salts in the treatment of anaemias in man was very limited. The speaker had investigated the action of copper, manganese, and iron, separately and in association with each other, upon a series of over 150 cases of non-Addisonian anaemia. Separate groups of patients were given, as sole treatment, (1) copper, (2) manganese, (3) copper and manganese, (4) various combinations of copper, manganese, and iron, in the form of salts. Control of treatment and interpretation of the results were difficult, since copper and manganese might be found in infinitesimal amounts in most foodstuffs, and it was hard to keep these patients on satisfactory diets for periods of six to twelve months, or longer. The results showed that: (1) Copper and manganese separately, or in association with each other, had apparently no value in assisting red cell or haemoglobin regeneration. (2) Manganese and iron, or copper and iron, gave no better results than iron alone. (3) Occasional cases of anaemia had exhibited haemoglobin responses after copper and iron equal to those obtained with greater doses of iron alone. In a few cases they also showed responses to relatively small doses of iron after previous prolonged treatment with copper. (4) Relatively large doses of copper and manganese had been administered for six to eight months at a time without good or ill effects. The best treatment for these cases in his experience had been adequate doses of iron in suitable form without any further adjuncts. Hydrochloric acid did not influence the haemoglobin response, nor did it depend upon gastric acidity or achylia.

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## SECTION OF PHYSIOLOGY AND BIOCHEMISTRY

*Thursday, July 28th*

### The Sex Hormones

With Sir Henry Dale in the President's chair, Dr. F. H. A. Marshall read the opening paper on the bearing of recent research on the sex hormones on clinical medicine. This paper was published in full in our issue of August 6th.

Dr. A. Butenandt (Göttingen), who followed, mentioned three isomeric follicular hormones with different physical and physiological properties. The hormone separated from the urine of pregnant women was of a similar formula, but was hydrated. He discussed at length their chemical nature and their spectroscopic behaviour. He also described the difficulties of the isolation and nature of the testicular hormone and allied substances. He was at present occupied in deciding whether there was only one testicular hormone or more. The male hormone was chemically related to the follicular hormone. Professor Doisy, while working with crystalline theelin, had not encountered any of the isomeric forms of Butenandt, or the compound reported by Girard. He considered that theelol (trihydroxy-oestrin) was not the principal hormone of follicular fluid ; the latter, however, might be identical with theelin. Chemical evidence indicated that in theelin there was a system of four rings, one of which was aromatic. The acidic properties were due to a phenolic group. Theelol was closely related, and was probably a 1,2 glycol. By alkaline fusion a dicarboxylic acid $C_{18}H_{22}O_5$ was formed. Oxidation by other procedures had not given significant information. Professor J. B. Collip (Montreal) gave an account of emmenin, a crystalline oestrogenic hormone obtained from the human placenta and from the urine during pregnancy. One fraction might be extracted with ether from an aqueous solution ; the other became ether-soluble after hydrolysis with 1 per cent. acetic acid at 180° C. Professor Collip also discussed the anterior-pituitary-like hormone of the placenta and urine (called A.P.L.). Massive doses caused a great increase in ovarian weight due to follicular cyst formation, which afterwards disappeared. The accessory organs of the male also increased in size for a time. He considered that luteinization was due to the combined action of two or more principles, as, for instance, A.P.L. and oestrin. They had found evidence suggesting the presence in an alkaline extract of the anterior pituitary body of a hormone inhibiting the gonad-stimulating hormone.

Dr. A. D. Campbell (Montreal) gave an account of his observations on the therapeutic uses of emmenin. He had found it of value in secondary amenorrhoea.

Encouraging results were also obtained in certain types of dysmenorrhoea. Menopausal symptoms of recent origin improved, but long-standing symptoms were unaffected. Some fifteen childless patients became pregnant when disturbed ovarian function was corrected. The vomiting of pregnancy was sometimes relieved by emmenin. Observations had also been made on the use of the anterior-pituitary-like hormone A.P.L. in irregular uterine bleeding. Lantern slides were shown to illustrate different types of menstrual irregularity and the beneficial effects of treatment by A.P.L. in the majority of cases studied. Dr. Campbell showed that the endometrium could not be regarded as an index of ovarian function in its entirety. Dr. GIRARD (Paris) gave an account of his experiments with Dr. Casimir Funk on oestrogenic extracts from urine. The ketonic and non-ketonic fractions had an equal activity. The former was not identical with ketohydroxy-oestrin as judged by the effect on the vagina of immature animals, but resembled the substance obtained from the urine of the pregnant mare. The non-ketonic fraction was similar to trihydroxy-oestrin as tested by its action on the adult castrated rat and by the vaginal test. The human hormone was identical with that obtained from mare's urine. Dr. Girard drew attention to the fact that his strain of animals (from the National Institute for Medical Research) were five times less sensitive than those used by Doisy. Similar observations had been made at Warsaw. These facts must be taken into account when deciding on international standards.

Professor E. LAQUEUR (Amsterdam) considered that there was probably more than one testicular hormone. Adding the follicular hormone to the male hormone greatly increased the action of the latter on the seminal vesicles. He discussed other sources of the follicular hormone, which he called "menformon." With reference to the standardization of these substances, he agreed as to the importance of such a measure in spite of the difficulties in measuring biological activity. He thought that the evidence was insufficient to show two gonadotropic factors in the anterior pituitary, but he considered there was a thyroid factor as well as a growth factor. Turning to the clinical use of sex hormones, Professor Laqueur was of the opinion that there was value in careful clinical observation apart from laboratory experiments. Dr. G. F. MARRIAN stated that by potash fusion a phenolic dibasic acid, $C_{18}H_{20}O_3$, was formed. On acetylation and distillation an anhydride, and not a ketone, was formed. This might indicate the presence of a five-membered ring. A study of monomolecular films showed that the molecule was a stable fused ring structure. There was no evidence for the presence of a double bond other than those in the benzene ring. A four-ring structure for the hormone was probable. Dr. B. P. WIESNER (Edinburgh) considered that comparison of the oestrous cycle and the menstrual cycle led to errors in analogy. He discussed the overactivity of the uterus in dysmenorrhoea and the attempt to reduce this by means of the luteal hormone.

## COMBINED SECTIONS OF PATHOLOGY AND BACTERIOLOGY

*Friday, July 29th*

### TISSUE CHANGES IN VIRUS INFECTIONS

With Dr. S. R. DOUGLAS, Vice-President, in the chair, a discussion on tissue changes in virus infections was opened by Professor J. C. G. LEDINGHAM. He said that the rapid growth of the experimental study of viruses under various conditions had reacted favourably on the histological side of this problem by supplying material more suitable in every way for accurate histological study. He defined viruses as living organisms distinguished from visible bacteria only by their small size, occupying positions on a dimensional ladder with its upper rung at about the limit of microscopical vision and its lower probably of a size little exceeding that of a molecule of haemoglobin. Cultural requirements of viruses were as yet practically unknown, so that in attempts to group apparently similar types of lesion due to various viruses they lacked that valuable correlation available in bacteriological diseases. But as in bacterial so in virus infections indisputable evidence of organ and tissue affinities were found. There were notable differences in the mode of attack and development of the essential lesions in the skin in the great group of pock diseases. These lesions, further, afforded excellent examples of inflammatory skin reactions with accompanying haemorrhagic necroses and degenerative changes in neighbouring epithelia, which was secondary to inflammation in the dermis. Yellow fever was cited as an example of a virus disease which apparently produced a pure necrosis of parenchyma without inflammatory change. The viruses associated with definite lesions in the central nervous system could be divided into two groups: (*a*) represented by herpes and intracerebral innoculation of vaccinia-produced meningitis, and (*b*) represented by rabies, poliomyelitis, Borna disease, and louping-ill—these attacked mainly the neurons. A number of well-known virus diseases, such as distemper, rinderpest, fowl plague, etc., appeared to produce no obvious tissue changes in the fatal cases. Of the proliferative lesions caused by viruses Rous sarcoma and warts were cited. The oral papillomatosis of dogs revealed remarkable species and cell specificity; as far as was known it would only infect the buccal mucosa of puppies. Professor Ledingham also referred to the fact that virus infections in some cases appeared to depend on, and in others were modified by, bacterial infections, quoting as examples swine fever and influenza. It was becoming evident that a change of host or a change in the method of propagation of a virus might profoundly alter the pathological picture and bring to light unexpected tissue affinities. He concluded that types of tissue change met with in virus infections did not differ in essence from those encountered in infections due to visible bacteria. The intracellular bodies were probably accidental occurrences in the course of massive proliferation of virus or elementary bodies in their neighbourhood.

Professor E. PASCHEN (Hamburg) said that from a common source the original pock, probably the human pock, after continuous passage through the same species of animal had developed three different strains—human pox, fowl-pox, and sheep-pox. The transformation of the aerially contagious virus of human variola into the vaccinia phase by passage through the cow or horse had been brought about by Nature herself in primaeval times. Presumably cow-pox was as old as small-pox. The pock agent was disseminated in the air by the patient, and found its way into the mucous membrane of the upper respiratory organs of contacts. In susceptible individuals a "septic" focus was formed during the course of the incubation period, and from this there was a sudden flooding of the blood stream, with the recurrence of metastases in skin and internal organs. In this primary focus there was enormous multiplication of the virus. There appeared to be no doubt that Guarnieri bodies consisted of colonies or masses of Paschen bodies—the so-called elementary bodies, discovered by Borrel in fowl-pox and sheep-pox and by himself in variola and vaccinia.

Dr. J. R. PERDRAU confined his part in the discussion to the reaction of microglia in the central nervous system in virus diseases. The characteristic of some of these diseases was a degeneration of the myelin sheaths around some of the smaller vessels in the brain and spinal cord, which led to a mobilization of the microglia. Such an intense reaction of the microglia was not seen in ordinary

tract degenerations associated with other diseases, and some of the virus diseases also failed to produce it. Dr. S. P. BEDSON spoke of the inclusion bodies which occur in the cytoplasm or nucleus in a considerable number of filterable virus infections. Cytoplasmic inclusions, as Professor Ledingham had pointed out, appeared to be virus colonies. It was not nearly so clear what interpretation was to be placed on nuclear inclusions. Was this change peculiar to virus infections, and, if so, what was the structure of the inclusions? The answer to the first question had been made more difficult by the discovery during the last two or three years of nuclear inclusions in the tissues of apparently normal animals. Nevertheless, the available evidence strongly supported the view that the nuclear inclusion was a specific virus change, and the work of Pinkerton on the intranuclear growth of Rickettsia suggested that the nuclear inclusion, like the cytoplasmic one, was also a virus colony. Mr. J. A. GALLOWAY said that the neurotropic viruses of rabies, poliomyelitis, and Borna disease could be safely placed in the group of viruses which showed an indisputable elective affinity for certain tissues. He then recounted his experimental evidence that these neurotropic viruses travelled through the body exclusively by the nerve fibres. Dr. G. W. M. FINDLAY described the differences between yellow fever and Rift Valley fever. Dr. R. W. FAIRBROTHER (Manchester) described experimental poliomyelitis in an investigation in which he was associated with Dr. E. W. Hurst, when 600 monkeys had been used. Professor L. ASCHOFF (Freiburg) said that intracellular and intranuclear bodies had been found in still-born infants, showing that they must have reached the infant via the placental blood, yet in these cases the mothers were quite healthy. He also pointed out that inclusion bodies in cancer cells were often examples of phagocytosis.

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## SECTION OF ORTHOPAEDICS

*Friday, July 29th*

### OSTEO-ARTHRITIS OF THE HIP-JOINT

Mr. R. C. ELMSLIE, in opening the discussion, limited his remarks to aetiology. He said he considered that osteo-arthritis of the hip, although a single clinical entity, was the result of a series of degenerative changes in the joint, resulting from any one, or more, of a number of causes. The radiograms showed a variety of mechanical changes—for example, loss of joint space, and alteration in the shape (lipping and mushrooming), position (subluxation), and density (cyst-like areas and patches of sclerosis) of the head of the femur. It was often difficult to say whether these mechanical changes were the result or the cause of the arthritis. The aetiological factors were traumatic, mechanical, toxic, chemical, and local disease of the articular ends of the bones. Traumata, presumably, acted by causing nutritional changes in the head of the femur. That long-continued strain might act in the same way was suggested by the fact that the joints in the body most commonly affected with osteo-arthritis were those in which there was a very accurate fit between the bone surfaces. A mechanically imperfect joint, resulting from coxa vara, pseudo-coxalgia, or congenital subluxation of the hip, often showed osteo-arthritis at a comparatively early age. Focal sepsis could be demonstrated, occasionally, to be a causative factor. Two known chemical causes were gout and alcaptonuria; possibly there were others. Osteitis deformans and syphilis might be the cause of mechanical changes in the head. Of the various causative factors in osteo-arthritis the mechanical appeared to be pre-eminent. Mr. E. W. HEY GROVES (Bristol), restricting his remarks to treatment, said that most patients had already indulged in many forms of physiotherapy and vaccine therapy before resorting to the surgeon. Apparatus was of little value. Forced manipulation under anaesthesia did sometimes relieve pain and increase the range of movement. With regard to surgical treatment the alternative procedures were: (1) cheilotomy, (2) arthroplasty, (3) arthrodesis, (4) excision, and (5) osteotomy. Cheilotomy—that is, trimming of the head of the femur to make it fit more easily into the acetabulum—gave only temporary relief. The formal arthroplasty, involving an extensive and lengthy operation, was unsuitable for the type and age of the patient. Arthrodesis was undoubtedly the ideal operation. What was yet lacking was a rapid and certain method of fusing the hip. Excision of the head of the femur relieved pain and left a mobile point, but at the expense of stability, and the patient should be warned that he would probably be dependent on crutches for walking. Osteotomy was a valuable procedure when adduct deformity and/or subluxation were present; it increased the apparent length of the leg, and, by altering the line of weight-bearing, diminished the pain at the joint. Dr. ROYAL WHITMAN (New York) said that in his opinion the predisposing cause was an incongruity of the joint, either congenital or acquired in childhood, which induced friction and a consequent destructive attrition. Apparatus was too cumbersome to be tolerated by the patient. He had been successful in relieving symptoms in these patients by performing the operation he had originally introduced for the treatment of ununited fracture of the neck of the femur. In this operation, now known as the Whitman reconstruction operation, the head of the femur was remodelled to less than half its former size, and made smooth and symmetrical with a file, and the trochanter, with its attached muscles, was transplanted down the shaft of the femur. Plaster fixation in full extension and abduction was maintained for a month, and then the limb was suspended in a splint provided with pulleys for active and passive movement. At the end of another month ambulation with crutches was begun. The purpose of the operation was to assure the attitude most essential in locomotion—namely, extension and abduction—and manual stretching of the limb in these directions was continued until voluntary control was established. Even if movement was not retained after the operation the result was a painless joint fixed in a good position. Mr. MAX PAGE said that aetiology had no bearing on the choice of surgical methods for the relief of osteo-arthritis. Surgical treatment was resorted to only after long and unsuccessful trial of non-operative methods of treatment, and the surgeon's task was to give permanent relief by a single surgical operation. The aim was to enable the young patient to return to work, and to relieve pain in the older patient (over 60 years of age). With the experience gained by operating on over 200 patients he had no hesitation in saying that arthrodesis of the hip was the best method of accomplishing this. He used the Murphy approach, knocking off the trochanter. He dislocated the head of the femur backwards, rawed the head of the femur and the upper half of the acetabulum, and finally drove in wedges of bone between the acetabular rim and the head of the femur to fill up any gaps. The operation was quick, taking between twenty and thirty minutes, and devoid of shock. In the young patient the limb was held in a plaster for eight weeks, and in the old, where a sound ankylosis was not of such importance, for three weeks.

Dr. MAX BÖHM (Berlin) thought that there was an intimate connexion between endocrine disturbances and osteo-arthritis. He agreed that static conditions were important factors in aetiology, in particular those due to an arrest of development—for example, failure of the

acetabulum to change from its pre-natal lemon shape to its post-natal orange shape ; failure in the reduction of the angle between the neck of the femur and the shaft from the almost vertical pre-natal position of the neck to the almost horizontal post-natal position ; and failure of the acetabulum to shift from its pre-natal position anterior to the anterior superior spine to its post-natal position directly under the anterior superior spine. With regard to treatment, he had found the Hessing type of weight-relieving apparatus of great value, but too clumsy to be tolerated by the patient. He had therefore tried with success a skin-tight spica made of elastic webbing in which thin steels were incorporated, effectively preventing movement at the hip-joint. The major surgical methods he advocated were extra-articular arthrodesis and femoral osteotomy. Dr. H. Warren Crowe gave an analysis of 126 cases of osteo-arthritis of the hip-joint treated, after full bacteriological investigation, by autogenous vaccines. He believed that the results obtained supported his view that any form of active treatment, such as manipulation, deep *x*-ray therapy, or surgical intervention, might with advantage be preceded by a course of vaccine treatment. Fifty per cent. of the patients of whom the present condition was known were either entirely symptom-free or very greatly improved. The Smart-Bristow coil should invariably be used to recondition atrophied muscles. He recommended passive exercises for the prevention and correction of flexion contracture. Dr. Rupert Waterhouse (Bath) said that he thought the orthopaedic surgeon got a distorted view of osteo-arthritis. In 200 cases of the monarticular type recently investigated by him there had been no gross trauma and no mechanical cause for the arthritis. Over 80 per cent. of the patients had been engaged in outdoor occupations ; 92 per cent. were men. The disease commenced between the ages of 50 and 60. The *x*-ray changes were, in order of their appearance, lipping, narrowing of the joint space, scattered decalcified areas in the head, and finally absorption of the head. He considered subluxation, when present, was the cause and not the result of the osteo-arthritis. Dental sepsis was common. For treatment he relied on hot mineral water bathing and douching of the hip. Improvement commenced after about three weeks and was obvious at the end of the sixth week. The younger the patient the more rapid and complete the response to treatment. Repeated courses of treatment at intervals of three to twelve months were advisable.

Mr. Naughton Dunn (Birmingham) said that his practice was to arthrodese the hip if movement of the joint was painful ; but if the pain was localized in the back he osteotomized the femur to correct faulty alignment. Subtrochanteric osteotomy was to be avoided if there was marked flexion deformity of the hip, as the femoral vessels might be damaged by the sharp edge of the upper fragment. Mr. W. Rowley Bristow said that different speakers seemed to be speaking about different conditions. Was not the explanation that the physician often saw the patient at a much earlier stage than the surgeon? His experience was that there were periods of intermission of symptoms, and any treatment in process at the time was given the credit for "a cure." Physiotherapy was of value ; he relied more on passive stretching by a gymnast than on faradic stimulation of muscle. His indications for operation were deformity and pain. For deformity he osteotomized the femur ; for pain he arthrodesed the hip—usually by an extra-articular method. He had had considerable experience of the Whitman reconstruction operation ; he thought it most valuable in bilateral cases and in women. The objections to it were that it did not prevent a limp, and rarely enabled a man to return to his work. Dr. Wright (Toronto) believed that treatment should be begun early in the disease. The aetiological factors were infection and errors of nutrition. Dr. Warren Crowe, in his opinion, was working on the right lines ; but, in addition, the diet should be carefully regulated and a balanced nutrition obtained. Dr. L. C. Hill (Buxton) advocated tenotomy of the adductor tendon under nitrous-oxide anaesthesia and fixation of the hip in abduction for one month. He believed that half the cases were infective in origin (these showed apparent cystic areas in the head of the femur on the radiogram) and half followed congenital malformation of the hip-joint.

## SECTION OF PUBLIC HEALTH

*Friday, July 29th*

### Maternity and Child Welfare Services

Sir George Newman took the chair, and voiced the apologies of Professor Gorter of Leyden, who had been prevented from attending, but whose paper would be read. Dame Janet Campbell reviewed the work done for the welfare of women and young children during the last century, pointing out that the present high rates of maternal and infantile mortality in many textile and industrial centres might be traceable in some measure to the unhappy circumstances that existed one hundred years ago. Various Acts of Parliament had brought some relief through the activities of the Poor Law Commissioners, the education changes of 1870, the Board of Health and Local Government Board, leading up to the local government measures of 1929 and the establishment of the Midwives Board in 1902. Investigations by Sir John Simon in 1859 and 1865 had foreshadowed infant welfare. These conclusions had been confirmed by Sir George Newman in 1906, by which time public attention had been drawn to the high mortality rate and the excessive sickness in young infants. The speaker traced the various practical steps which had ensued, and pointed out that from the beginning infant welfare had been preventive and educational rather than curative, although certain limited forms of treatment had been introduced. Interest in the welfare of women had been originally focused upon the industrial and social questions raised ; in some cases women had been excluded from certain dangerous occupations, while in others their health as employees had been increasingly safeguarded. The conditions of midwifery had been improved by the Maternity and Child Welfare Act, and still more effective schemes favoured by the British Medical Association among other bodies were being retarded at present only by the existing financial stringency. It was fully recognized that closer co-operation with the general medical practitioner was eminently desirable. As regards the future, the two main issues were the safeguarding of maternity and the health of the young child. The speaker then gave details of what was required for the prevention of puerperal sepsis, the supervision of pregnancy, the provision of analgesia or anaesthesia in labour, the inclusion of the midwife in the municipal or nursing scheme, and the protection of the health of the pre-school child from acute infections—by improving mothercraft, by the supervision of trained nurses and health visitors, and by the securing of periodical medical advice.

The paper sent by Professor E. Gorter (Leyden) was read by Dr. A. Salusbury MacNalty. The author remarked that the infant welfare centre had become, after a few early mistakes, the most important part of all measures designed to prevent infantile mortality and morbidity, especially when the milk supply was pure and attention was paid to the general education of the people. The work of the visiting nurse was of most vital importance,

for she could talk to the mothers and ensure the necessary steps being taken in the home. The real causes of death in the first week of life had not yet been determined, and the mortality rate for this period had hardly diminished during the last fifty years. Obstetricians, paediatric experts, and pathologists should jointly conduct a careful scientific medical study of the real causes of infant mortality and morbidity during the first seven days of life. More attention should also be paid to the pre-school age, and "preventorium" treatment centres should be more numerous. The three main problems to be tackled were the prevention of infectious diseases of the respiratory tract, of death and disease due to obstetrical trauma, and of rickets.

Dr. D. H. PATERSON submitted some constructive criticisms. In view of the prevalence of nasopharyngeal infections and consequent lymphoid overgrowth, the Public Health Service must maintain the highest possible standard of surgery. The school age should be lowered to 4 years, and more kindergarten schools should be provided for selected cases from the age of 3. Preventive medicine would then begin earlier, and at a time in the child's life when there was a liability to mistakes in feeding and upbringing. Many infants suffering from so-called malnutrition were really underfed, and the directions on tins of dried milk were not always reliable. The wider application of immunization to diphtheria would be desirable, and also the provision on a larger scale of convalescent serums from cases of infantile paralysis, measles, and whooping-cough. In almost 100 per cent. of the fatal cases of tuberculosis in childhood the infection was of human origin: better isolation was required. Since there was evidence that rheumatic fever was an infection, it would be well for this disease to be made notifiable.

Dr. W. M. ASH (County Medical Officer of Health, Derbyshire) enumerated nine environmental and personal factors adversely affecting infant life: age and ill-health of the mother; lack of breast-feeding; lack of skilled aid at childbirth; the industrial employment of women; maternal ignorance or carelessness; urban conditions; domestic insanitation and uncleanliness; poverty; and illegitimacy. Three outstanding factors—namely, urbanization, hot dry summers, and illegitimacy had had a consistently bad effect on the infantile death rate. The first two were, however, being shorn of their influence by the concerted attack which had been made on bad environments. The fall in the neo-natal death rate was to be associated with the greater attention now paid to ante-natal care. The maternal mortality rate was certainly not increasing, and adoption of the recommendations of the Departmental Committee on Maternal Mortality and Morbidity would be most effective, probably, in reducing it. Financial difficulties had unfortunately prevented this, but the provision of adequate facilities in respect of ante-natal care was a matter of such great urgency that the Committee's recommendations ought to be strongly supported by the medical profession, and the nation be made to realize how serious was the present delay. Half-measures would fail. The PRESIDENT commented on the wide outlook and the practical nature of the four papers. Some provocative statements had been made which invited rejoinders. Lady BARRETT agreed that ante-natal work was far from complete yet; it needed for its future development the associating in it of obstetricians. The attendance of a bacteriologist and pathologist at ante-natal centres was very necessary in view of the prevalence of *B. coli* urinary infections. A blood examination should be made in the case of every pregnant woman. Puerperal pyrexia was very often associated with a low blood count, such anaemia being often overlooked by the clinical attendant. It was important that the specialist in childhood diseases should be in close touch with the obstetrician from the day of the infant's birth. Dr. W. H. F. OXLEY emphasized the great importance of diminishing neo-natal deaths. The cause was often ante-natal or intra-natal. Attendance at confinements by medical practitioners engaged in industrial work was undesirable. A frequent cause of death due to confinement was the failure to use masks. Moreover, unnecessary trauma, especially the premature application of forceps, was also responsible in view of the bacterial complications which might ensue. Public expenditure on maternal welfare would be useless if the midwifery was bad; good midwifery was not necessarily expensive. Dr. E. NASH referred to the graph shown by Dr. Paterson illustrating the number of children sent into hospital at different ages. He thought that this clearly indicated the necessity of rendering compulsory medical examination between the ages of 2 and 5. Professor L. G. PARSONS (Birmingham) considered the question of co-operation most important. In Toronto there was an excellent co-ordination of medical officers of health and hospitals. The visiting nurses in that city attended all the medical examinations of the children, and were thus able to act more effectively in the home. Such co-operation between health visitors and voluntary hospitals had not been possible so far in Birmingham: the municipal hospital there was insufficiently staffed, and certain types of urgent cases had to be sent to voluntary hospitals. Nutritional anaemia was very common in pregnancy, while tuberculous meningitis in children, though preventable, was still very common and fatal. Rickets was more prevalent now in Birmingham than for many years. A grave epidemic of poliomyelitis was anticipated in the future; a serum pooling system had therefore been established, and a small staff to deal with the emergency was being formed. Dame JANET CAMPBELL, replying, endorsed the pleas put forward for better co-operation. It would be unfortunate if the medical student were given the impression that there was a definite separation between care of the mother and care of the child, for the general practitioner had to look after both. One of the main difficulties in securing the assistance of health visitors was the small size of the health staff. Minor forms of rickets were certainly more prevalent this year in industrial areas where there were many unemployed persons. Dr. D. H. PATERSON, replying, said that lack of sunshine last year had much to do with the present increase in rickets—also noted in London. Routine anti-rachitic treatment was desirable for children; it was given in this way in Holland. In reply to a question from the President, Dr. Paterson explained that the large increase in tonsil and adenoid operation figures shown in one of his illustrations was due to the fact that many more of these patients were now retained in hospital for one or more nights, instead of being sent home immediately after the extraction. Tonsillectomies were probably not undertaken excessively, and would be required until better conditions prevailed as regards housing. Dr. W. M. ASH, replying, stated his opinion that too many tonsillectomies were being performed. Such operations often failed eventually because the original cause of their being undertaken had not been dealt with. Such causes were diseases of the upper respiratory tract, and the symptoms reappeared some months later. Blood-letting was probably the reason for the apparent temporary improvement. Adenoidectomy should only be performed when it was quite certain that the obstruction was really adenoidal in nature. About 30 per cent. of the cases could be cured by removing the causative factor, which was often dental sepsis.

### PARATYPHOID AND WATER SUPPLY

Sir ALEXANDER C. HOUSTON described the Epping outbreak of paratyphoid fever in February, 1931. He illustrated with slides some of its chief features, and its bearing

on an important water supply. Convincing evidence had been obtained of the great value of storage, and also of the fact that paratyphoid bacilli might persist for a very long time in the sewage coming from an infected town. He thought the time was ripe for considering seriously whether all milk should be pasteurized. Dr. C. A. Mortlock-Brown (Braunton) asked whether sufficient chloride and ammonia had been introduced into the water to kill or merely to retard propagation of the bacteria. Did such introduction have any morbid action on people drinking the water? Dr. J. J. Paterson (East Berkshire) said that a wider question had been raised—namely, that of treating water, milk, and food after contamination rather than preventing it. Milk should be compulsorily kept clean at its source, rather than be subsequently disinfected. In his own district pipe-supplied water was available throughout. Dr. Brown (Hereford) asked whether any effect had been noticed after the application of chlorine, and, if so, how soon? Sir A. Houston answered that there was evidence that the bacteria in water so sterilized were destroyed. The doses of chemicals used were far too small to have clinical consequences. He had previously been accustomed to chlorinate water before filtration, but later had done so subsequently, with more success, a smaller dosage, and diminished risk of injuring the filters. The President, thanking the speaker for his most valuable address, referred to the great part Sir A. Houston was playing in giving London the finest water supply in the world.

## SECTION OF NEUROLOGY

*Friday, July 29th*

### Disorders of the Sympathetic System and their Treatment

With Dr. J. S. Collier (Vice-President) in the chair, the discussion was opened by Professor Edwin Bramwell (Edinburgh), who said that the sympathetic nervous system was occupying an increasingly prominent place. A vast literature was accumulating, which required sifting and correlating. He traced the progress of neurology for the past century, referring to the observations of Sir Charles Bell, Waller, and Broca. For a long time, however, the sympathetic nervous system had remained a closed book. Gaskell was the great pioneer in its attempted elucidation. Professor Bramwell referred to the important researches of Langley and Anderson, who did much to unravel the details of sympathetic innervation. A universal nomenclature was much to be desired. The best was that adopted by Langley, who suggested the term "autonomic" to describe this part of the nervous system as a whole, and the term "sympathetic" to denote the thoracic outflow, and "parasympathetic" the craniosacral outflow. The clinical work of Eppinger and Hess on vagotonia and sympatheticotonia was also dealt with, as well as the anatomical researches of Hunter and the surgical work of Royle. The speaker then described the anatomy and the functions so far known of the autonomic system, and especially their relation to the endocrine organs. On the clinical side, although further observation had shown that it was not possible to draw a hard-and-fast line, all could recall definite examples of vagotonia and sympatheticotonia. The part played by the emotions and anxiety on the autonomic nervous system was emphasized. They had little knowledge of the morbid anatomy of the system under discussion, achalasia gastrica being almost the only example. The clinical discussion was left to other speakers, the opener merely indicating the progress in surgery of the autonomic nervous system, such as the treatment for Raynaud's disease, megacolon, etc. Sir Percy Sargent considered three main points in the surgery of the autonomic system. (1) So far the operations were destructive—the cutting off of sympathetic nerve supply—and as yet nothing constructive had been attempted. (2) They were dealing, not with actual diseased structure, but only with a disturbing influence resulting in disease in other parts. (3) The surgery of the autonomic system was still in an experimental stage. The resection of the cervical sympathetic chain in the older method of treating Graves's disease was referred to; also the resection of sympathetic nerve roots in the treatment of Raynaud's disease, of sympathetic fibres in causalgia, senile gangrene, etc. The operation in Raynaud's disease and in megacolon now had an established position, and the results appeared extremely promising. Certain types of chronic constipation were amenable to similar treatment. Mr. R. H. Boggon dealt with the treatment of chronic constipation by operative measures on the autonomic system. The normal function of evacuation of the bowel depended upon the proper balance of the sympathetic and the parasympathetic system. In Hirschsprung's disease the treatment consisted of section of the sympathetic supply (as opposed to the parasympathetic supply) to the colon. The same procedure could be applied to certain types of chronic constipation. The results were not so dramatic as in the case of megacolon, and the patients required careful after-treatment to re-educate their colon function. Mr. Boggon gave a description of the anatomy of the autonomic supply to the colon, and described the technical details of the operation.

Professor E. D. Telford (Manchester) dealt with circulatory disturbances to the limbs, such as the complications resulting from cervical rib, Raynaud's disease, thromboangiitis, etc. Those cases with cervical rib were the most clear-cut and instructive. The bundle of sympathetic fibres was irritated by constant friction against the abnormal rib; such irritation led to spasm of the vessel and finally to thrombosis, the latter resulting from the poorly nourished condition of the vessel wall owing to interference with the vasavasorum. To obtain good results by sympathectomy it was essential to see cases at an early stage. As regards circulatory disorders of the lower limbs an experiment might first be made by giving a spinal anaesthetic. If there was no rise of temperature (2° to 3°) in the lower limbs, it was useless to proceed to operation. Many failures were due to incomplete operations and defective knowledge of the physiology of the autonomic system. Although the effect of operation might seem temporary at first, the ultimate results appeared very good. Mr. Geoffrey Jefferson (Manchester) discussed the central cell stations in the hypothalamus. He described the anatomy of, and the recent work on, this region of the brain in the attempted localization of the function of the different nuclei. Mr. Jefferson then described cases of cerebral tumour involving the hypothalamus, the pituitary body, and the region of the third ventricle. Such lesions might be associated with glycosuria, disturbances of temperature, polyuria, polydipsia, etc. He illustrated his descriptions with many admirable lantern slides. Professor J. Beattie (Montreal) described the anatomy and physiology of the hypothalmic region. There were no fewer than seven nomenclatures of the different nuclei. Throughout the animal kingdom the hypothalamic nuclei had the same connexions. There were three main cell groups: (1) the supra-optic, (2) the posterior hypothalamic, and (3) the posterior pituitary. The posterior hypothalamic group controlled the autonomic system. When this organ was destroyed in animals they invariably died from general peritonitis following the perforation of acute gastric or duodenal ulcers. The speaker suggested that the hypothalamic group balanced

the sympathetic and the parasympathetic systems. The supra-optic nuclei inhibited, and possibly controlled, the hypothalamic group. Finally, Professor Beattie further described the connexions and physiological mechanisms concerned with these hypothalamic nuclei, illustrating his remarks with excellent diagrams.

Dr. W. RUSSELL BRAIN dealt with the anatomical arrangement, both central and peripheral, of the oculo-sympathetic system, and described the clinical phenomena resulting from its disturbance. He considered especially the symptom of exophthalmos. It had occurred during the attacks of "autonomic epilepsy" in the case described by Penfield. Exophthalmos, especially retraction of the upper lid, resulted from overactivity of part of the oculo-sympathetic system. In severe cases of exophthalmic goitre marked oedema of the orbit had always been a feature. Thus there were at least two factors in the production of exophthalmos: (1) overactivity of the oculo-sympathetic system, and (2) oedema of the orbitic contents. Vaso-dilatation of central origin might play some part in the production of exophthalmos, and this aspect might repay investigation. Mr. A. S. BLUNDELL BANKART mentioned sympathectomy for spastic paralysis. The results had proved failures, the operation probably being based on unsound physiological research. Nevertheless, it might have had some value as a physiological experiment. Removal of the stellate ganglion for infantile hemiplegia also proved unsuccessful in relieving the spasticity, and, as far as could be seen, it had no effect on the circulation of the limbs beyond transitory vaso-dilatation. Removal of the communicating branch between the first and second dorsal nerves, as well as excision of the stellate ganglion, also had no effect on spastic states. No disturbance of the sympathetic nervous system was found, even when the patient was seen years afterwards, beyond an occasional slight degree of enophthalmos. Although ramisectomy had proved a failure for spastic conditions of the limbs it had been valuable in introducing an operative technique. Mr. J. BAGOT OLDHAM (Liverpool) considered the use of spinal anaesthesia as a test of the results that might be expected from sympathectomy in cases of intestinal stasis, and especially in Hirschsprung's disease. In the latter the colon, on *x*-ray examination, was found to be relatively contracted during spinal anaesthesia—the same result that could be expected from sympathectomy. Renal sympathectomy had been found to abolish renal pain, and Mr. Oldham mentioned seventeen cases which had been relieved by such an operation. Dr. S. LEVY SIMPSON dealt with Raynaud's disease, mentioning the original work of Raynaud and of Thomas Lewis, and the more recent work at the Mayo Clinic. With complete interruption of the sympathetic supply to the limb in early cases all symptoms were completely abolished. In later cases secondary changes in the blood vessels might have occurred, and, although there was relief, the results were not so good as in early cases. He would draw a sharp distinction between thrombo-angiitis obliterans and Raynaud's disease. The former might be unilateral and affected only larger vessels, whereas Raynaud's disease was invariably bilateral and affected only the smaller vessels. Also the former usually affected males, and the latter females. Up to five years, observation showed that the results of sympathectomy were permanent in the case of the lower limbs; in the upper limbs some regeneration might occur. In the absence of the opener, Dr. E. A. CARMICHAEL summarized the discussion and briefly replied. It seemed that so far good results could be obtained only in Raynaud's and Hirschsprung's diseases. The question of the relief of pain by operations on the autonomic system still awaited solution.

## SECTION OF OBSTETRICS AND GYNAECOLOGY

*Friday, July 29th*

### VARIOUS PAPERS

The concluding meeting of the Section was occupied in the reading of a series of papers. The first communication was read by Professor NAGUIB MAHFOUZ BEY (Cairo) on the conservative treatment of rupture of the uterus. His observations were based on an experience with 110 patients, whom he had come across in the last twenty-eight years. The occurrence of rupture of the uterus was always due to neglect in the treatment of obstructed labour, or to unskilled intervention. Injudicious use of oxytocic drugs was also responsible for rupture. In their series they had only one case of rupture of a Caesarean scar. This patient walked into hospital. Recurrence of rupture was not due to weakness of the scar but to persistence of the condition which was responsible for the original rupture. An examination of 100 specimens failed to demonstrate any degeneration of the uterine muscle. In more than half of the cases in their series pituitary extract had been given by the midwife. In two cases morphine was indirectly responsible for rupture. The position of the tear depended upon the causative factor. The prognosis depended largely upon the amount of haemorrhage and the degree of shock occurring before the patient came under treatment. In the presence of severe shock expectant treatment gave the best results. Laparotomy was the treatment of choice when haemorrhage was uncontrollable or when the foetus had escaped into the peritoneal cavity. Operation should be carried out under gas and oxygen. The lowering of blood pressure contraindicated the use of spinal anaesthesia. In small tears not complicated by haemorrhage no local treatment was necessary. Collections in the broad ligament should be evacuated and the cavity plugged or drained by tubes. The mortality in rupture of the uterus was necessarily high. In most of their cases the amount of haemorrhage either internally or externally was surprisingly small. The paper was illustrated by a remarkable series of pictures. Dr. HEREERT SPENCER related four cases treated conservatively by packing with iodoform gauze. He agreed that their treatment should be eclectic. Routine hysterectomy would be extremely fatal. He had not seen a paper on this subject of such merit as the one under discussion. Mr. STEVENS agreed with the value of treatment by plugging. Another point of vast importance was the use of shockless anaesthesia. He advocated morphine and infiltration of the abdominal wall with novocain. DAME LOUISE MCILROY had only come across five cases. She agreed that extraordinarily few cases of rupture after Caesarean section or myomectomy occurred. She thought that pituitrin was a very dangerous drug except in the hands of the very highly skilled. She did not agree that morphine was dangerous. After craniotomy the patient should be left to deliver herself—immediate delivery was too often fatal. Professor ELLUL (Malta) said that many patients died before coming into hospital. Many more arrived in a moribund state. For combating shock after delivery he thought that forceps applied direct to the uterine arteries was the most efficient method. He agreed that conservative treatment was preferable whereever possible. Professor MAHFOUZ replied. Dr. R. CRUICKSHANK (Glasgow) then read a paper on studies on the aetiology of virginal leucorrhoea, in which he showed that excessive secretion was associated with an excess of glycogen in the cells of the vaginal mucous membrane. Dr. A. SHARMAN (Glasgow) believed that the discharge was a simple excess of the normal vaginal secretion in the non-infective group. In the infected cases erosion was

only rarely the cause of the discharge. Treatment must depend on a pathological examination of the discharge. In the non-infective cases local treatment did not appear to have any value. Dame Louise McIlroy thought that leucorrhoea was more a metabolic condition, and she had found colon lavage quite valuable. Cutting off sugar in the diet was also effective. She had practically given up local treatment.

Dr. Chassar Moir read a paper on the response of the human puerperal uterus to drugs, with a note on the suckling reflex. He had observed that suckling greatly increased the activity of the uterine muscle. This did not always occur. Suckling sometimes appeared to have no effect. He demonstrated a series of graphs to show the effect of ergot and its derivatives, pituitary extract, quinine, histamine, and injections of glycerin upon the contractility of the uterine muscle. Dr. J. S. Fairbairn welcomed the rehabilitation of ergot. He paid a tribute to the admirable research work being done by the younger generation. Dr. R. E. Roberts (Liverpool) read a paper on ante-natal radiology. He used a series of slides to show how the size of the foetus, the presentation, and the abnormalities of the maternal pelvis could be clearly demonstrated by radiography. He thought that in any case of doubt much information could be gained by means of *x*-ray examination. The President stated that Lloyd's now would not insure against twins without an *x*-ray examination.

## SECTION OF HISTORY OF MEDICINE

*Friday, July 29th*

### Medical Journalism

At this meeting, which was devoted to the study of certain manifestations of British medicine during the hundred years of the Association, Sir D'Arcy Power, senior Vice-President, took the chair in the unavoidable absence of the President, Professor Charles Singer. Opening a discussion on medical journalism in the British Empire, Dr. N. G. Horner said that the pioneer medical journal, as the term was now understood, was the *Lancet*, started by Thomas Wakley in 1823. Long before this there had been monthly and quarterly medical periodicals—*Medicina Curiosa*, the earliest English medical journal, which appeared in 1684, the *London Medical Journal*, which began in 1781 and continued for about ten years, the *Medico-Chirurgical Review* (1795–1807), the *London Medical and Physical Journal* (1799–1833), and the *British and Foreign Medico-Chirurgical Review* which, founded in 1816, had a long and useful career. But though their scientific articles might have been weighty their influence was small, and from the establishment of the *Lancet* weekly journals became the only ones that counted in medical politics. For sixteen years the *Lancet* alone voiced the feelings of the majority of the profession, and for another ten years only one paper, the *Medical Times* (1839–51), tried to dispute its possession of the field. When, however, the British Medical Association rose to importance it was inevitable that its weekly organ should assume part of the duties formerly undertaken by the *Lancet*. From the time when it began to get into its stride the progress of the Association depended in large measure on the growing success of the *British Medical Journal*, without which the scattered members could not have been kept together, and many reforms must have failed. Turning to the present day (having, in passing, paid a tribute to Ernest Hart and Dawson Williams, great editors to whom the *Journal* owed its high position among the professional periodicals of the world) the speaker said that in this centenary year the number of medical periodicals published in these islands was, with certain definite exclusions, such as dental and veterinary publications, exactly a hundred. In the British Empire over-seas the total was twenty-seven. The partition of medicine into more and more plots of intensive cultivation led to the founding, one after another, of specialist journals; but though in some respects this proliferation had gone too far, it had done good in advancing knowledge and in relieving the general medical periodicals of the hopeless task of trying to keep their readers acquainted with technical minutiae. There was room for improvement, said Dr. Horner, in the medical press of this country and of the Dominions. The spirit of the age called for a crisper presentation of what was salient in fact and theory, but without sacrifice of solidity. There had been half-hearted attempts to revive the combative medical journalism of a hundred years ago, but levity did not pay in the grown-up medical world of to-day, and the tightening of the law of libel had made scurrility a dangerous weapon to its user.

Dr. Robert Hutchison deplored the overproduction of journals that accompanied the splitting up of realms of knowledge and inquiry into ever smaller and more specialized fields, and pleaded for a measure of "birth control" to deal with the glut. Unrestricted multiplication of periodicals had three undesirable effects: it tended to isolate from one another workers in different fields; it made search of "the literature" increasingly difficult; and it added to the expense both of individuals and of libraries. He believed that there should be not more than two weekly journals, and that these should appeal almost exclusively to general practitioners; and not more than one periodical for each specialty, the present redundance leading to overpublication, overlapping, and confusion. Present-day medical journalism, said Dr. Hutchison, was too heavy-handed; it took the life and colour out of medicine. He did not ask that the *British Medical Journal* should read like *Punch*, but he would prefer it a little less like a telephone directory. Its bound volumes should merit the title recently given to certain omnibus volumes—*Tales of Mystery, Detection, and Horror*. Dr. W. Brockbank (Manchester) said that the most interesting fact about medical journals a hundred years ago was the bluntness, invective, and belligerency that marked both their editorial and correspondence columns. It was well to remember, however, that though their methods were drastic they were waging a battle for all that was best in our profession—good medical and surgical methods and improved teaching. The lectures of certain hospital surgeons and physicians were reported to the exasperation of the lecturers, and a high position offered no immunity to charges of malpraxis. Some were apt to think that the lay public of to-day was better versed in medical matters than its ancestors. But *The Doctor*, a penny magazine first published in 1832, catered for both lay and medical readers, not only giving detailed methods of first aid, but describing, with graphic illustrations, major surgical procedures.

Professor J. A. Nixon (Bristol) described the origins and progress of the five purely local provincial medical journals at present published in England. They were the *Liverpool Medico-Chirurgical Journal*, *Newcastle Medical Journal*, *Birmingham Medical Review*, *Bristol Medico-Chirurgical Journal*, and *Leeds University Medical Society Magazine*. Their special functions were: to give opportunities for recording observations that would be crowded out of the general medical periodicals and unacceptable to specialist publications; to stimulate practitioners of the district to note down much that might otherwise be lost; to provide material for chroniclers of the future; and, in obituary notices, to preserve the life stories of those whose examples we might humbly strive to follow. Dr. Leonard Findlay expressed sympathy with the view that there was far too much publication.

But his remedy was not "birth control" which, in this context, meant suppression of free publication, but to make authors pay for the publication of their articles. The proposal, he agreed, was Utopian, but its application would mean that few people would offer papers for publication unless they had something to say and felt that they simply must say it. The provincial journals had long ceased to serve a useful purpose. In the old days they reflected the work of the local medical school and society; but to-day all the best work was contributed to the national press.

### Physiology in the Last Hundred Years

Sir E. Sharpey-Schafer (Edinburgh) said that when in 1836 the authorities of University College, London, decided to found a special chair of physiology they were creating a precedent in these islands. Anatomy had been looked upon as the only subject of which a preliminary knowledge was needed for the practice of medicine and surgery, and even Sharpey, who was appointed to the new chair, was essentially an anatomist. He had acquired, however, a sound theoretical knowledge of physiology, and, recognizing the relation between structure and function, devoted much of his teaching to the minute structure of the cells and tissues of the body. Looking for a successor to George Harley, the first teacher of practical physiology, he chose his distinguished pupil Michael Foster, who became the first professor of practical physiology in University College. When, as happened shortly after, Foster was invited to Cambridge, his chair was occupied by Burdon-Sanderson. To his subject Foster attracted some of the best brains at Cambridge: Francis Balfour, Walter Gaskell, George Romanes, J. N. Langley, Charles Sherrington, F. G. Hopkins, and many others. On his retirement in 1903 he was succeeded by Langley, and on Langley's death in 1925 Joseph Barcroft became occupant of the chair. The world-wide influence of the Cambridge school emphasized the debt of British physiology to Michael Foster, and, through him, to William Sharpey. In 1870 Burdon-Sanderson divided the professorial duties at University College with the speaker, who succeeded him in 1883, and remained in London till his transference to Edinburgh in 1899. His successors were Ernest Starling and William Bayliss, and then Archibald Vivien Hill and Lovatt Evans. The University College School of Physiology had produced Halliburton, Leonard Hill, Francis Gotch, Benjamin Moore, MacWilliam, Waymouth Reid, Herring, Milroy, Thompson, and Pringle, by whom, and others too numerous to mention, the traditions of the British school had been carried to all parts of the world. Having passed in brief review the advance in knowledge of internal secretions, accessory food factors, and other aspects of biochemistry, Sir E. Sharpey-Schafer said that in this and all other branches of physiology Great Britain was holding her own. Dr. Michael G. Foster followed with some delightfully told reminiscences of Sharpey and of Burdon-Sanderson, who "carried the flame of physiology to Oxford." Professor D. Fraser Harris (London) concluded the discussion by contrasting the place given in physiology to the ductless glands forty years ago and at the present time.

### British Tropical Medicine

In the absence of Dr. Philip Manson-Bahr, abstracts from his paper on British discoveries in tropical medicine during the last hundred years were read by Dr. A. P. Cawadias. The early part of this paper consisted of a series of thumbnail sketches of the pioneers of tropical medicine: of the "sowers" of modern knowledge in whose ranks were Sir T. Ronald Martin, Sir James Annesley, Sir George Ballingall (who made the first clinical differentiation between the two forms of dysentery), William Twining, and "the imposing figure" of David Livingstone; of the "tillers"—Timothy Richard Lewis, D. D. Cunningham, Thomas Spencer Cobbold, Joseph Bancroft, Henry Vandyke Carter, Sir Joseph Favrer, George Lamb, G. M. J. Giles, Andrew Davidson, J. E. Dutton, and J. L. Todd—who, in conditions of indescribable difficulty, applied to tropical medicine methods that had their origin in the pioneer work of Pasteur and Koch; and, finally, of the great school founded by Sir Patrick Manson, who had been known, and justly so, as the "Father of Modern Tropical Medicine." In Charles Wilberforce Daniels, Manson discovered a first lieutenant who, after performing original work, was instrumental in confirming Ross's malaria researches in 1899. The names of Sir David Bruce and Sir William Leishman would for ever illuminate the records of the Indian Medical Service; and of Sir William Simpson and Sir Andrew Balfour it could be said that they laid the foundations of tropical hygiene. The remainder of the paper was devoted to historical summaries of work that had been carried out by British pioneers on malaria, trypanosomiasis, leishmaniasis, yellow fever, relapsing fever, beri-beri, amoebiasis, cholera, plague, undulant fever, filariasis, and bilharziasis.

Dr. J. B. Christopherson followed with a scholarly account of the history of antimony therapy, recalling the famous sixteenth century feud between the antimonists and the anti-antimonists; of these the latter were said to know only three remedies—bleeding, purgation, and enemata. After a long period of eclipse, antimony achieved renewed prominence in therapeutics in 1905, when, following Ehrlich's work on arsenic, it was found to have a wide range of parasiticidal activity in diseases caused by bacteria, protozoa, and metazoa. Since then it had been used in the treatment of granuloma inguinale, trypanosomiasis, leishmaniasis, schistosomiasis, and bilharziasis, the field of its useful application having been enormously extended in 1908 by the discovery of an intravenous method of administering antimony tartrate (Broden and Rodhain). It was then discovered that a drug, intolerable and toxic to the skin, subcutaneous tissues, and mucous membranes, could be injected safely and without pain into the blood vessels. Summing up, Dr. Christopherson said that, within therapeutic limits, antimony was remarkable for four properties: its wide range of use as a parasiticide; its selective faculty both upon parasites and the cells and tissues of the body; its non-cumulative behaviour; and its tonic effect upon sufferers from debilitating diseases.

### British Homoeopathy

Sir John Weir began by sketching the careers, personal characteristics, and contributions to knowledge of leading homoeopathists in the last hundred years. The first British homoeopath was Sir Frederick Foster Quin, who, having studied with Hahnemann, returned to England imbued with the principles of *similia similibus curantur* and its corollaries, the single stimulus to vital energy, and the minimal dose to supply that stimulus. Among his colleagues and successors were Paul Frederick Curie (grandfather of the discoverer of radium), Robert Ellis Dudgeon, famous for devising the sphygmograph, John James Drysdale, founder of the *British Journal of Homoeopathy*, Richard Hughes, who tried to bridge the gulf between homoeopathy and "orthodox" medicine, James Compton Burnett, originator of many important homoeopathic remedies, John H. Clarke, compiler of the homoeopathic *Dictionary of Materia Medica*, and Charles Wheeler, who restated Hahnemann's original conception in terms of modern biology. The fight between the schools, said the speaker, had been a tragedy for both, and he appealed to the official school of medicine to take advantage of the brilliant legacy bequeathed by Hahnemann. Sir William Willcox reminded the Section that there was complete

freedom of action in therapeutics. Much of the advance in medicine during the past century could be reconciled with homoeopathic principles, but it was still incumbent upon homoeopaths to prove the validity of their formulae in relation to serious diseases. Could they, he asked, cure syphilis with secondary lesions by means of homoeopathic drugs and doses? That was a crucial test. Dr. NEATBY, Dr. G. H. BURFORD, and Dr. FRANK BODMAN (Bristol) took part in the subsequent discussion, all of them expressing gratitude to the Association for giving homoeopathists an opportunity of stating their beliefs to their "orthodox" brethren.

## SECTION OF PHYSICAL MEDICINE

*Friday, July 29th*

### EFFECT OF OPEN AIR AND LIGHT IN THE TREATMENT OF DISEASE

With SIR LEONARD HILL in the chair, Sir HENRY GAUVAIN (Alton) read a paper on the influence of open air, light, atmospheric pressure, and temperature in the treatment of disease, with special reference to tuberculosis. He said that though light therapy could not in any sense be considered as specific in the treatment of tuberculous disease he did not wish to deny its usefulness. He cited the very variable reports on the use of this agent, and attempted to correlate these results somewhat by means of his theory of "varying stimuli and varying response." Actinotherapy, he thought, should at present be considered as an art rather than an exact science. Sir Henry also dealt with such auxiliary methods as sea-bathing, and stressed the importance of seasonal response. Sir LEONARD HILL then read a paper on infra-red rays and ventilation. He pointed out that the nasal mucous membrane tended to become congested as a reflex effect from stimulation of the skin by infra-red rays. The effect, he said, was only pronounced in those with deflected nasal septa or chronic catarrh. He had been able to show, however, that rays emanating from an incandescent source, acting on the same or other parts of the body, would antagonize this effect of the infra-red rays; the effect of adequate ventilation was somewhat similar.

Dr. A. ROLLIER (Leysin) sent a paper on the use of open air and sun cure in pulmonary tuberculosis combined with surgical tuberculosis. This was read by Dr. J. D. Comrie. The author pointed out the metastatic nature of tuberculosis and the consequent endocrine imbalance often seen in these cases. He stressed the analogy of the seed and soil, and pointed out that physical and open-air treatment dealt only with the latter factor, and so increased the resistance of the body to the superadded infection. In discussing the role of the skin in such treatment he referred to this organ as a "peripheral heart," and stressed its importance. With reference to the generally accepted view that sunlight is contraindicated in pulmonary disease, he expressed the opinion that this was not so if the technique of exposure was properly understood and graduated. He differentiated the various types of tuberculosis by their response to such methods, and stressed the importance of the euphoria which was generally induced in favourable cases. Dr. J. VAN BREEMAN (Amsterdam) showed a questionary which he had circulated amongst members of the profession with regard to the effect of soil and climate on the various forms of tuberculosis. He summarized the replies to this. Opinions expressed seemed to indicate that no mere generalization would suffice to cover the subject. A list of favourable and unfavourable influences was, however, produced, the general opinion being that the Dutch coast line was favourable for many forms of the disease and might in Europe be more extensively employed therapeutically.

Dr. P. ELLMAN spoke on the limits and uses of physical medicine in thoracic disease—more particularly in pulmonary tuberculosis. He stressed the importance of a knowledge of the scope and technique of physical methods for the general physician. He dealt with both preventive and therapeutic measures separately, and emphasized the role of external methods of treatment in each case. Exact diagnosis in every instance was a primary necessity prior to the institution of treatment. Dr. A. EIDINOW dealt with the question from the angle of experimental physics. He recounted his experiments in the absorption of light rays and the effect of their assimilation on the metabolism of the human body, and dealt with the question of raising the non-specific immunity of organisms against the bactericidal action of the blood.

Dr. W. S. C. COPEMAN made a preliminary report on the result of four years' treatment of juvenile chorea by means of baths at "neutral" (skin) temperature twice daily. He described and illustrated the technique employed, and discussed the physiological results noticed. Clinically his proportion of relapses was found to be considerably less than that obtained by drug treatment, although the treatment took longer in the first instance. Dr. MORTLOCK-BROWN spoke on the evils of smoking and drinking and lack of fresh air. Dr. VERE PEARSON (Mundesley) stressed the importance of fresh air in the treatment of tuberculosis. He commented unfavourably on the design of many Continental sanatoriums in this respect. Dr. L. CALTHROP suggested that open-air methods, such as were employed in the treatment of tuberculosis, which had for their object the raising of the body's resistance, might be used with advantage in cases of infective arthritis. Sir LEONARD HILL then gave a practical demonstration on the subject-matter of his opening paper.

In the afternoon Dr. GILBERT SCOTT gave a practical radiographic demonstration at the B.R.C.S. Clinic for Rheumatism, Peto Place.

## SECTION OF OTO-LARYNGOLOGY

*Friday, July 29th*

### TONSIL AND ADENOID OPERATIONS

With the President, Sir STCLAIR THOMSON, in the chair, a discussion on the end-results of the tonsil and adenoid operation in childhood and adolescence was opened by Drs. J. ALISON GLOVER and JOYCE WILSON.

The incidence of the removal of tonsils and adenoids had risen in 1931 to more than four times the figure for 1922, and the operation was carried out four times as commonly in the well-to-do as in the poor. The literature suggested that, with the exception of diphtheria, tonsillectomy had no value in preventing infectious disease. Sore throats were decreased, but colds, if anything, were slightly increased. There did not appear to be any real evidence of prophylactic or therapeutic value in the case of rheumatism. In scarlet fever, otitis media, and mastoiditis there was very little change, but possibly the latter two diseases were slightly more frequent in the tonsillectomized. The figures for school children supported those arrived at by Cunningham for older students—namely, that the incidence of all illnesses was greater for the tonsillectomized, and that the amount of illness was the same before and after the operation. The authors did not wish to deny the immense value of the operation in cases in which there was definite obstruction to respiration or sepis and toxic absorption. The literature and the epidemiological observations did suggest, however, that these good results were statistically outweighed by the indifferent results obtained by the almost routine removal of tonsils and adenoids in children without sufficient indication. In the authors' opinion a large

proportion of the tonsillectomies performed were unnecessary, entailed some risk, and gave little or no return.

Dr. Reginald H. Miller was of the opinion that the removal of tonsils tended to modify the severity of juvenile rheumatism and to lessen the frequency of cardiac complications. It tended to prevent the onset of acute symptoms or relapses, especially when performed early. Tonsillar sepsis was, however, only one factor in the disease, and lack of complete recovery was not a condemnation of tonsillectomy. Mr. J. A. Keen (Leicester) excluded the results of incomplete removal and post-operative complications from his remarks. He found that nasal catarrh, nasal obstruction, and much sinusitis were very greatly improved, if not cured, by tonsillectomy and the removal of adenoids. Enlarged cervical glands had been reduced enormously since the more frequent removal of tonsils, and in cases of intermittent earache, otitis, and deafness the results were uniformly good. Chronic suppurative otitis with granulations, cholesteatoma, etc., was not improved by the operation, but such cases were less frequent in children who had had unhealthy tonsils removed. Dr. R. Graham Brown (Brisbane) gave figures showing the great part that tonsillectomy played in avoiding diphtheria and in clearing up the most obstinate diphtheria carriers. He also quoted statistics to show how the incidence of mastoiditis was reduced as that of tonsillectomy increased. Mr. C. Hamblen Thomas believed that there were other factors than infection in the enlargement, and that preventive and hygienic measures might do much to reduce the numbers of cases requiring operation. He considered that under the present conditions the operation was followed by very satisfactory results in the general and mental health of the school child. Cervical adenitis and rheumatism were much improved by operation, which was best performed about the age of 5 or 6 years.

Mr. Herbert Tilley referred to the formation of plaques of lymphoid tissue on the posterior pharyngeal wall as Nature's attempt to replace lost lymphoid tissue: this must not be regarded as a failure. He saw no reason why healthy tonsils should be removed at the same time as an enlarged and infected pad of adenoids. The improvement in nasal respiration would in many cases reduce the size of hypertrophied tonsils. Mr. Jones-Phillipson (Capetown) said that the results of the operation were not uniformly good. In the young child the results on respiratory, otitic, and gastro-intestinal troubles were very good, but in the adolescent, where it was done for asthmatic, rheumatic, glandular, and otological conditions, they were not so good because the operation should have been performed earlier. Dr. Dan McKenzie said that no real effort had been made to discover the cause of enlarged tonsils and adenoids. He strongly recommended that this should be done. Dr. J. Kerr Love (Glasgow) said that the tonsils and the adenoids were only parts of one ring of lymphoid tissue, and that the various parts were not all diseased at the same time. The adenoids were usually affected before the tonsils and should be removed, the tonsils being left till they became diseased. Dr. James Adam said that the great increase in the operation was not to the credit of the profession. Lymphoid tissue tended to increase in the presence of oral sepsis, especially when the permanent teeth erupted. Attention to the general hygienic surroundings would improve the pharyngeal conditions. Infectious diseases were not prevented by tonsillectomy. Mr. Lowndes Yates discussed the end-results of incomplete operation, of operation in the presence of sinusitis or otitis, and of not operating when the child was really suffering from the enlarged, or more often septic, tonsils. Dr. P. Watson-Williams (Bristol) remarked that often cases of recurrence were really due to unsuspected sinus disease. The tonsils had a defensive function, but when badly diseased they could no longer carry out that function and should be removed. Sir James Dundas-Grant said that the results of the incomplete removal were often very good. He agreed that the tonsils could frequently be safely left when diseased adenoids were removed. He had found that removal of tonsils and adenoids did tend to prevent infectious disease, but that the presence of infected lymphoid tissue predisposed to the infection.

The President, summing up the discussion, said that there was no question of abolishing the operation, but there was a definite feeling that it was performed too often and on insufficient indications. He thought that the patient must always be considered as a whole, and attention not directed merely to the condition of the throat and nasopharynx.

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## SECTION OF COMPARATIVE MEDICINE

*Friday, July 29th*

### Senescence

With Dr. J. A. Arkwright, a Vice-President, in the chair, Dr. G. P. Bidder and Dr. B. P. Wiesner opened a discussion on senescence.

Dr. Bidder (Cambridge) said that death from age was not natural; growth was. Natural death was violent. Senescence and the possession of a definite specific size were two features in which mammals differed from most aquatic animals (in which senescence was rare and size was usually determined by age). He suggested that these differences were correlated, and that senescence was the manifestation for regulating size. This was a necessary consequence of Galileo's principle that an animal could not continue to increase indefinitely the size of its parts while keeping the same proportions if it was to maintain its mechanical efficiency. This law did not hold for aquatic animals whose increasing weight was counterpoised by the water displaced. The negative growth occurring in the latter part of the life of man and other land animals was not a necessary property of the body, but was due to the regulating mechanism for body size continuing to act after growth had ceased. Dr. Wiesner (Edinburgh) stated that observations on an in-bred rat stock suggested that manifested senescence was correlated with loss of weight. No absolute correlation between the state of the gonad and the condition of the organism as a whole was discovered. Administration of gonadotropic hormones to aged animals induced, in most cases, reactivation. Senile animals could respond to the growth factor.

Professor W. R. Miles (Stamford University, California) said that from the testing of 840 persons (of age ranging from 6 to 95 years) it was found that most of the mental and motor abilities measured reached their high point at 18 to 29 years of age. The declines found in three successive periods (30 to 49, 50 to 69, and 70 to 89 years) amounted to 5, 15, and 40 per cent. respectively. About one-fifth of those over 70 were still able to perform at a level equal to the average for the adult population. Major S. S. Flower (Tring) dealt with the question of the comparative duration of life in various animal groups. Among invertebrates the longevity was often surprising. Some of the lower vertebrates were very long-lived, while there was no evidence of a really short-lived bird. Mammals were, however, short-lived compared with the others, and very few reached an age of 30 years, the only exceptions, in addition to man, being the elephant and the hippopotamus. Professor H. A. Harris described the senescent process in the placenta, ranging from degeneration and death in the chorion laeve to the process of obliterative endarteritis at the twenty-second week of

foetal life. He discussed the part played by the infarcted areas of the placenta in the transmission of antibodies and bacteria. He also mentioned the changes in the skull from birth to old age, with especial reference to the venous sinuses of the diploi and the deposition of new bone in proximity to those areas of the brain displaying senile atrophy. Dr. W. CRAMER considered the relation between senescence and cancer. Senescence, he said, was absent in the protozoa, and was the price paid for differentiation. Biochemically a young cell differed from an old one by its water content, and this was true also for cancer cells, their essential difference from normal cells being in their escape from senescence. He believed that the problems of the cause of cancer might lie in the answer to the question of what change had taken place in the malignant cell to allow it to escape from this process. To subject it to senescence would provide a means for cure.

Mr. KENNETH WALKER said he believed that heredity was a significant factor in longevity. Worn-out nerve cells played an important part in senescence, and he discussed the connexion between gonads and senescence. Dr. BRUCE WHITE considered the question of whether the downfall of the body was not due to antibodies produced against its own tissues. Mr. WILLIAM MILLER (Edinburgh) detailed his observations on the relation between testicular function and senescence, with special reference to the Voronoff operation in sheep. He found no improvement was produced by the operation when the host testes were still functional, but there was a vague improvement in old rams, which might be due either to male hormone in the grafted gland or to the stimulus of manipulative intervention. Professor W. FREI (Zürich) pointed out that senescence was due to a tendency of the cell to acquire an equilibrium due to the physico-chemical state of the living matter. Life was a series of chemical reactions, the speed of which depended on the rate of exchange of colloids; it was quicker in younger animals. *In vitro*, chemical equilibrium stopped the reaction; *in vivo*, decomposition was continuous, because of the elimination of the products. Equilibrium did not occur until diffusion was inhibited by loss of water. Physiologically, life was a dis-equilibrium; senescence was a tendency to acquire equilibrium. Dr. B. P. WIESNER and Dr. G. P. BIDDER briefly replied to the discussion.

Drs. HADDOW and BLAKE (Edinburgh) presented a paper on six cases of neoplasm in fish, with a summary of the literature on the subject.

# England and Wales

### Census Statistics of Middlesex

"An acre in Middlesex," wrote Macaulay, in his essay on Bacon, "is better than a principality in Utopia." That was written at a time when Middlesex was predominantly rural, except that it contained London in one of its side pockets. To-day it would be almost true to say that London contains Middlesex, 90 per cent. of the acres of this county—the smallest but one in England—being borough or urban district. The metropolis has eaten into Middlesex, for its great towns—Willesden, Tottenham, Ealing, and Hendon, each with a population of over 100,000—are as much a part of London as is Hampstead or Wandsworth. The population of the county has grown by 385,000 during the last ten years—a rate of growth five times that of England and Wales as a whole[1]—and what was once a great forest now bears a population of 1,638,728. There are 7,000 persons to the square mile, as compared with 5,400 ten years ago. The houses and dwellings have increased by 115,000 during this period, slightly exceeding the growth in the number of separate families. The families living in single occupation of separate premises represent 64.7 per cent. of the total number, and those living two to the dwelling 27.4 per cent. The average size of the Middlesex family has fallen from 4.05 persons in 1921 to 3.66 in 1931 (in London the figure is 3.46), a decline greater than that during the previous decennium, when the population was being depleted by war. The two-person and three-person families now account for nearly half the total number of families, and the large family with eight persons or more represents an insignificant fraction of the whole. The amelioration in housing conditions is illustrated by the relative incidence of excessive room densities. A ratio of two or more persons to a room has been taken by the census authorities as the standard of overcrowding; this is, of course, an entirely arbitrary standard. On such a basis only 2.6 per cent. of the private families of Middlesex come into the "overcrowded" category, whereas this proportion ten years ago was 4.7 per cent. Thus, in view of the rapid increase of population, the social tendency is good in this respect. Females outnumber males in the proportion of 1,132 to 1,000, the figures in England and Wales as a whole being 1,087 to 1,000. Curiously enough, the males in Middlesex in their twenties are largely in excess of the females at the same age period, the respective figures being 61,790 and 47,677. This is explained partly on the assumption that the number includes a large proportion of inward migrants attracted to the labour market of the near-by metropolis. In London itself, however, there is a small surplusage of women at those ages. In the thirties the males and females of Middlesex are approximately equal in numbers, and at later ages there is a marked excess of females. The average age of the male population is 31.5 years, and of the female population 33.5, an increase of something of the order of two years over the figure shown at the previous census.

[1] *Census, 1931. The County of Middlesex.* H.M. Stationery Office. (3s.)

### District Nursing in London

Some time ago the Central Council for District Nursing in London approached the London County Council to ascertain the attitude which the Council would be likely to adopt towards the work of the voluntary nursing associations in view of the fact that the boards of guardians, whose duties have passed to the Council, made grants to such associations for work undertaken among poor people who, but for such nursing assistance, would have been a charge on public rates. As a result of a number of ensuing conferences and inquiries a provisional scheme has now been evolved, the main details of which are that district nursing associations shall co-operate with the County Council in dealing with cases for which care in the Council's hospitals is not essential. Cases will be referred to the nursing associations by the medical superintendents of the Council hospitals and by the Council's district medical officers. In consideration of the work undertaken the Council will pay to the Central Council for District Nursing a sum of £1,000 in respect of each of the quarters ending December, 1932, and March, 1933, and thereafter such sums as may be determined in the light of experience. The Central Public Health Committee states that in the course of its inquiries it has been impressed with the valuable work accomplished by the voluntary nursing associations among the poorer classes of the community. Adequate nursing is a necessary adjunct to the domiciliary

medical service provided under Poor Law powers, and it would appear to be in the Council's interest to make use of suitable existing organizations rather than set up a directly controlled district nursing service. So far as the London County Council is concerned, medical treatment in the home is provided for the sick poor by the district medical service through 101 part-time medical officers and, in sixteen districts, through whole-time officers on the staff of the Council's general hospitals. Patients are visited in their own homes and are seen also by medical officers at forty-eight medical relief stations (formerly known at Poor Law dispensaries), and in fifteen districts at the private surgery of the medical officer. The number of domiciliary visits paid by district medical officers during 1931 was 65,624, and the attendances of patients at the medical relief stations during the same period numbered 257,910. At certain of these stations situated at or adjoining one of the Council's hospitals, a nurse from the hospital is in attendance, and at others arrangements are made for a nurse either from the local district nursing association or from the council hospital or institution to be present when required.

### London Milk Supply

During the first quarter of the present year 309 samples of milk were taken at London railway stations, twenty-nine of which proved tuberculous. Following upon information sent to the medical officers of health of the counties concerned, twenty-two cows were found upon inspection to be affected with tuberculosis, and were dealt with under the Tuberculosis Order, 1925. Twenty-two samples were taken from the milk of the cows at ten institutions belonging to the London County Council, and two samples proved on bacteriological examination to be tubercle-infected. Three cows found to be tuberculous were slaughtered.

### Research at the University of Leeds

The annual report for 1931 of the Department of Pathology and Bacteriology at the University of Leeds has been prepared jointly by Professors Matthew J. Stewart and J. W. McLeod, and indicates how the work is steadily increasing in amount and in interest. An addition to the grant made by the Board of Leeds Infirmary has enabled the much-needed assistance to be obtained for dealing with the numerous routine investigations required by that institution. In other Leeds institutions the work is remunerated on a specimen basis, and the income rises with the higher number of specimens investigated. As regards research, the investigation of normal gastric functions continues ; it was found that while only one out of seventy males was completely achlorhydric, eight out of 100 members of the nursing staff were without hydrochloric acid in the gastric juice. Industrial lung diseases are being studied. It has also been discovered that bilirubin may exist in two distinct forms, each giving rise to a separate series of salts. A new explanation of the van den Bergh reaction is suggested on the basis of these results, and a full account of this work has been prepared for publication. Attention is being directed to the search for a reliable method of determining quantitatively the amount of bilirubin in biological fluids. Experimental work is being carried on to discover the effects on the liver of prolonged dosage with iron, and the changes in the blood and urine in rabbits with shale oil necrosis of the liver, including a comparison of various tests of hepatic function. A detailed analysis of 167 cases of aneurysm coming to necropsy during the past twenty years has thrown light on the aetiology of this condition. A report has been prepared for publication. Work directed towards the explanation of the serious effects produced by a certain diphtherial strain, *B. diphtheriae gravis*, are being prosecuted, and attempts are being made to compare the type incidence and severity of diphtheria in different places. The new block (the Algernon Firth Institute of Pathology) is approaching completion, and should come into use before the end of the year. The bacteriological section of the department is at present housed temporarily in the new wing of the medical school.

### Royal Southern Hospital, Liverpool

Although the use of the out-patient department at the Royal Southern Hospital, Liverpool, is now restricted for consultation purposes only, except in cases of accident and emergency, the number of new patients rose from 25,726 in 1930 to 26,394 in 1931, but the total of attendances fell somewhat in the orthopaedic and skin departments owing to the earlier transfer of these cases for electrotherapeutics, massage, and actinotherapy. In the annual report of this institution for 1931 regret is expressed that lack of money prevented the extension of the operating theatre unit, and has thus necessitated the surgical and nursing staffs undergoing long periods of duty. The number of radiograms taken has risen from 10,210 in 1927 to 15,822. The total number of new in-patients during the year under review was 3,881, as compared with 3,865 in the previous twelve months. Although considerable reductions in the cost of maintaining the hospital were effected in 1930, and again in 1931, there has been an increase in the working loss from £9,515 to £11,769. This result is due mainly to a decrease in the sum received from the Merseyside Hospitals' Council, and to loss of interest owing to the sale of securities. It was pointed out at the annual meeting of the hospital last April that only about 5,000 of the total population of Liverpool were assisting in the maintenance of charities, and that there had been a heavy fall generally in voluntary contributions, perhaps owing to a misconception that a measure of State aid was now available. In view of the continued losses on working it has been decided to close two wards, each containing twenty-six beds, and to effect other economies where possible.

### Devonshire Hospital, Buxton

In his speech at the annual meeting of the subscribers to the Devonshire Hospital, Buxton, Sir Humphry Rolleston expressed regret that the chairman, Mr. Robert Whitehead, J.P., who had been a member of the Committee of Management since 1908, and for twelve years had served in the capacity of chairman, was obliged, by reasons of health, to be absent. Sir Humphry said that to be president of the hospital was a high honour, for which he wished to express his sincere appreciation and thanks. Coming at the time when he was leaving Cambridge—his tenure of the chair there had come to an end—his election had created the curious impression in one quarter that he was to become resident in the hospital. He knew something of the work the hospital had been doing for so many years in the fight against rheumatism and allied diseases. Since the present building was opened in 1859 there had been over 200,000 patients, and if the number treated in the old building were added the total would be nearer a quarter of a million. Last year the hospital treated no fewer than 3,504 in-patients. But there was another way in which a hospital such as this, treating a special class of patient, might do untold good, and that was by the discovery of new knowledge of the disease, especially as to its cause, so that enormous benefit might be conferred on those who could not come to the Devonshire Hospital. In order to prevent the onset of disease, which was the true ideal of medicine, it was essential to know the conditions which favoured it, for then the responsible factors could be avoided, removed, or antagonized. Scientific treatment depended on an accurate knowledge of the causes. Often

the underlying causes of disease were hidden from the naked and unassisted eye, and detection required special means, such as those of the bacteriological, biochemical, and radiological sciences. It was therefore satisfactory that the Devonshire Hospital was well equipped in these respects, and especially that the research chemist, Mr. Race, devoted his whole time to the study of the action of the Buxton waters, of the nature of rheumatic diseases, and of gout, which had been described as the *opprobrium medicorum*—the cause of shame to the medical profession. The reputation of a hospital depended not only on its buildings, equipment, nursing, and on the number of patients it cured or relieved, but on the results of research into the problems of disease which were carried out by its staff. Although the upkeep of the laboratories and the salaries of the research workers would inevitably increase the cost per patient—it had indeed more than doubled since 1914—it promised in the end to be an economy for the nation by reducing the lamentable loss of money and time among the industrial workers. The present time of financial stringency hit the hospitals hard, and it was a matter for regret that the Devonshire Hospital was not without the anxieties that affected them all ; but the position of the hospital compared favourably with that of most others, and the committee was to be congratulated on its successful conduct of affairs in a most difficult year.

# Scotland

### Medical Research in Scotland

The Scottish Committee of the British Medical Association, which has been in touch with the Department of Health for Scotland on the subject of medical research in that country, has represented to the Department that there are fields of medical investigation in which the general practitioners could make a valuable contribution, and that something has been lost in the past by the failure fully to appreciate the general practitioner's point of view and to utilize his experience. As an outcome of meetings, the Department has nominated several of its medical officers as members of an Advisory Committee, while the Scottish Committee has appointed its chairman, Dr. Elliot Dickson, its vice-chairman, Dr. J. B. Miller, Drs. John D. Comrie, Jas. Young, and the Scottish Medical Secretary as members of this joint committee. They will review the whole subject and make suggestions on the co-operation of general practitioners in medical investigations in Scotland. The Advisory Committee had one meeting at the beginning of this month, when Dr. Morrison McIntosh of the Department of Health was elected chairman. It will take into account and review the statutory inquiries which are carried out by the insurance practitioners as part of their contract.

### Royal Samaritan Hospital, Glasgow

The annual medical report of this institution is published as a pamphlet separate from the main report, in order that obstetricians, gynaecologists, and general practitioners may be able to study the clinical information derivable from the work of the hospital. In the report for 1931 it is stated that 3,176 patients attended during the year, and that 2,833 operations were performed ; the mortality rate was 1.23 per cent. In the various diseases injury associated with child-bearing was an aetiological factor in 1,191 cases, and infection associated with child-bearing in 881. A new growth was present in 607, and maldevelopment in 219. Infection not associated with child-bearing was present in 402 instances. The statistics are classified so as to indicate the extent to which various aetiological factors occurred severally and jointly. Of the operations 1,711 were solely of a minor vaginal nature, and 249 of a major vaginal kind. In 639 instances an abdominal operation only was performed, and in 218 abdominal and vaginal operations were combined. The remaining sixteen operations were not classifiable under these headings. Tables are provided to illustrate the various pathological lesions encountered, and their relation to such circumstances as age, parity, and duration of stay in hospital.

### Bequest to Edinburgh University

By the will of the late Mrs. Annie Mina Cameron the whole of her estate, valued at £77,000, was left to the University of Edinburgh, with directions that the income be used to provide an annual prize for the best essay on bacteriology. As the property was situated in India, England, and Jersey, an action was brought before Mr. Justice Maugham in the Chancery Division, London, by the next-of-kin, to determine the question of the testator's domicile. She was of Scottish parentage, was married in Scotland, and died in Jersey. According to the law of Scotland the next-of-kin was cut out, while in Jersey, no claim having been made within a year and a day, the will stood as it directed. The case concerning domicile in England was settled on the University of Edinburgh agreeing to pay £1,000 each to the two next-of-kin. The amount provided was still greatly in excess of that which could be used for the purpose indicated, and it was intimated that the University would apply to the Scottish Courts for a scheme with regard to the disposal of the surplus.

### The Royal College of Physicians of Edinburgh

The annual report of the curator, Sir Robert Philip, states that 1931 had been a year of continued activity in both the research and reporting departments of the College. Twenty-three researches of a high order have been undertaken by the staff and independent investigators ; thirteen papers have been published, while ten more are in the press ; and over 15,000 reports—histological, chemical, and bacteriological—a greater number than in any previous year, have been sent out. The superintendent, Dr. A. G. McKendrick, and Dr. W. O. Kermack, in continuing their work on epidemiology, have conducted an investigation into the prevalence of a disease in a population from which certain individuals are being removed as the result of the disease, while fresh individuals are being introduced as the result of birth or immigration. A second statistical review of the results of antirabic treatment (at the instance of the Health Section of the League of Nations) has been completed, and Mrs. E. K. Dawson has continued her valuable research on the tumours of the breast: publication is shortly to be made of the results of some of her investigations. Other researches include: a study of tumours of the pituitary and the preparation of a cabinet gallery of tumours relating to diseases of occupation by Lieut.-Colonel W. F. Harvey and Mr. T. D. Hamilton ; a study of the pathology of deaf-mutism by Dr. J. S. Fraser ; further work on the lesions produced in the rabbit's brain by the injection of bacteria by Dr. David Orr ; a continuation of their work last year on the morbid anatomy and the histology of tuberculous disease of the lungs of children by Drs. C. McNeil, Agnes McGregor, and W. H. Alexander ; the isolation of definite species of haemophilic organisms from various situations, and preliminary work in connexion with the study of bacteriophage by Lieut.-Colonel W. Glen Liston ; researches in chemotherapy by Dr. W. Muir, Dr. Kermack, and their co-workers, particular attention being paid to the synthesis of quinoline compounds;

researches bearing upon the colloidal chemistry of immunology by Drs. R. H. Hopkins, Kermack, and Mr. Spragg; studies in gastric secretion by Dr. T. C. Mitchell; experiments to determine the factors which influence the curdling of milk in the infant's stomach, by Dr. Douglas Nicholson; and a mathematical investigation into the solution of differential equations by methods involving non-commutative algebra.

# Ireland

### Dispensary Hours

At a recent meeting of the Lisnaskea Guardians the Ministry of Home Affairs wrote with reference to the proposal to require the medical officer of the Newtownbutler dispensary district to attend at the dispensary from 11 a.m to 3 p.m. each day, except Sunday. It was pointed out that the period of attendance seemed unnecessarily long and calculated to interfere with the medical officer's attendance on patients in their homes, and reason was sought as to why the guardians had made such a proposal. A letter was also read from Dr. Dolan relative to the Newtownbutler dispensary, suggesting that the dispensary hours, etc., remain unaltered, and that he should attend to the patients as before. It was decided to accept the terms of the doctor's letter.

### Londonderry-Limavady Regional Education Committee

At a recent meeting of the Londonderry-Limavady Regional Education Committee, Dr. May S. Miller, school medical officer, reported that during the quarter ended June 30th, 1932, she had carried out the annual medical inspection of twenty-one schools in the Londonderry, Glendermott, and Park areas. The total inspected was 1,283—routine examinations 891; special examinations 392. Ninety-six children were given the opportunity of having their eyes refracted free, and of these thirty-four were supplied with free spectacles. Defects were noted in several schools. The building of a new school in place of Shantallow had been discussed for some time, and was very urgently needed. Great improvements, however, had been carried out at Culmore, Ballougry, Greerstown, Ross-nagalla, and Dunbrock since last year, and a beautiful new and well-equipped school (Killaloo-Cumber) had taken the place of the old Killaloo and Cumber schools. The temporary school at Glendermott in place of the Faughanbridge school was a great improvement, but still left much to be desired. It was hoped that the plans for the erection of a central school in this area would soon be completed. The school nurse, besides attending and assisting at the medical inspections and performing a great deal of clerical work, revisited sixty-two schools, visited forty-six children at their homes, and assisted at four dental clinics and six refraction clinics. The report was adopted.

### Sweepstakes Prize Money

Statements which have appeared in an English daily newspaper with a large circulation in Great Britain and Ireland alleging that it is the intention of the Irish Free State Government to interfere with the distribution of the prize money in the Cesarewitch Sweepstakes have been officially declared to be wholly without foundation. The newspaper in question suggested that people in Great Britain feared a Government prohibition of prize money being sent to winners in Great Britain, or the impounding by the State of a percentage of the prize money, or the introduction of legislation requiring prize-winners to take a portion of the value of prizes in Irish goods. As President of the Executive Council, Mr. De Valera made it clear that the Government has not, and never had, any intention of interfering in any way with the prize money or of taking any action antagonistic to the interests of ticket-holders. Mr. Joseph McGrath, Hospitals Trust, Ltd., in a communication to the Press has stated that he had the full authority of the Minister for Justice to deny emphatically and categorically any suggestion that the Irish Free State Government will interfere with or place any restriction whatever on the prize money for the Cesarewitch sweep. Mr. McGrath further denies the statement that the sweepstakes organizers are being bombarded by inquiries on these lines from anxious subscribers. Instead of there being a slump in the sale of Cesarewitch sweep tickets, there has been an increase of 180 per cent., as evidenced by the certificate of Messrs. Craig, Gardner and Co., chartered accountants, who have been the official auditors of the Hospitals' Sweepstakes since their inception.

### Shellfish Gathering in Belfast Lough

At a meeting of the Belfast Corporation Public Health Committee a letter was read from the Whitehead Urban District Council relative to persons gathering shellfish on the foreshore of Whitehead. It contained a request that in view of the serious menace of this practice to public health, the Corporation, as Port Sanitary Authority, should have notices of a permanent nature erected prohibiting the gathering of shellfish on the foreshore, and an offer to erect such notices in prominent positions. The Medical Superintendent Officer of Health reminded the Committee that under the Belfast Corporation Act, 1930, any person gathering shellfish from any part of the foreshore of Belfast Lough, which lies on the landward side of a straight line drawn from Blackhead, County Antrim, to Orlock Point, County Down, is liable to a penalty of £5. He also stressed the danger of the practice to public health, and stated that there had been a number of cases of typhoid fever caused by eating shellfish gathered from the foreshore of the lough. The Committee directed that permanent notices be prepared and forwarded to the Whitehead Urban District Council for erection, and also that other local authorities whose areas are contiguous to Belfast Lough should be requested to co-operate in the erection of the notices and in the detection of offenders.

### Building of Houses in the Free State

The Minister for Local Government and Public Health, Irish Free State, recently introduced a Housing Bill in the Dail, and in the course of his remarks stated that in the Free State there were about 600,000 inhabited dwellings. During the past ten years over 26,000 houses had been provided by local authorities, public utility societies, and private persons. Grants amounting to about £2,500,000 had been made in regard to these houses. It was estimated that more than 60,000 houses were still required to meet immediate needs (including the replacement of existing insanitary dwellings). House production at the average rate of 2,600 houses per annum provided only for replacements at the rate of less than one-half of 1 per cent. per annum. It was questionable whether that rate of progress would meet normal depreciation, but it was certain that it would never make any inroads on the enormous existing housing needs. In urban areas the main source of supply would be the local authority, operating under the Housing of the Working Classes Acts. The financial provisions were framed so as to enable these local bodies to undertake at once comprehensive schemes to clear out all slums and provide their total housing needs without putting an undue charge on the rates. For slum clearance schemes the State would pay up to two-thirds of the annual charges on loans. This would enable a house costing £300, of which the economic

weekly rent inclusive of rates would be about 10s., to be let at a weekly rent of, say 3s. inclusive of rates without a greater loss to the local authority than £5 per annum. In the larger areas, where costs would be higher, a house costing £400, of which the economic inclusive weekly rent would be about 14s., could be let at an inclusive weekly rent of, say, 5s., with an annual loss to the local authority of about £6. The Government was prepared to make the maximum contribution permissible under the Bill so long as it was satisfied that the houses were let to the most needy applicants, and that the rents charged were not unnecessarily low in any case. Local authorities must therefore exercise the greatest care in the fixing of rents and the choice of tenants, and the tenants must be selected with strict regard to income and size of family and nature of existing accommodation. The payment of the subsidy would be conditional on these matters being carefully attended to by each local authority, and if any case should be found in which the spirit of the Bill was not honoured, the Minister would not hesitate to stop the subsidy. So far as urban local authorities were concerned, provision was made for the payment of grants up to 60 per cent. of the cost for the acquisition and renovation of existing houses.

# Correspondence

## THE ADVANCE OF MEDICINE

Sir,—In his presidential address to the British Medical Association Lord Dawson wrote (*British Medical Journal*, July 30th, p. 183):

"It has lately been stated with authority [Moynihan, Romanes Lecture] that the craft of surgery had 'almost reached the end of its progress along the lines which so far it has followed,' that 'the full fruits of Lister's work have now been garnered,' and that with operations now carried out upon every organ in the body little further success can be expected. This gives me to wonder and to think. Surely surgery has not reached so gloomy a finality. 'Life is short but Art is long.' Listerism which freed surgery of its chains is surely a great permanent possession which conditions all progress but without determining the nature or limit of that progress."

Many questions relevant to this paragraph have been put to me, and I find it necessary, therefore, to explain that Lord Dawson has here lapsed into grave misapprehension of my clear message, carefully expressed. Lord Dawson has not, I think, appreciated the distinction between the "craft of surgery" and "surgery." The craft of surgery is not by any means the whole of surgery! This craft has, in truth, almost reached the end of its progress; but surgery, as I have so often stated (once again in this very Romanes Lecture), is a strong arm not only of therapy but of research: it has a scientific no less than an artistic value. I see no evidence of finality, gloomy or otherwise.

This unfortunate confusion has led Lord Dawson to add, in a footnote, that Erichsen in 1873 expressed a similar view. Erichsen in his address (*British Medical Journal*, 1873, ii, 414) asserted that there were two schools of surgery in this country, the *practical* and the *philosophical*—the former made resplendent by the names of the Heys, the Clines, the Coopers, Lister, and Syme; the latter, having as its founder and leader John Hunter, numbered Brodie and Paget among its members. The former school was characterized "by boldness in conception and rapidity, precision, and simplicity in the performance of operations." It was in regard to technical dexterity of the *practical* school, and in that respect alone, that Erichsen saw finality.

"The *art* of surgery like all other manipulative, plastic, or imitative arts can only be carried to a certain point of excellence. That we have nearly, if not quite reached the final limit there can be little question."

And he adds,

"While we can scarcely hope to see any further progress in these directions, the case is widely different with the other great school of surgery—the scientific."

A leading article in the next issue of the *British Medical Journal* says (page 463) "our hopes for advancement must rest on the scientific school. . . ." And again, Erichsen writes,

"We can scarcely hope to pass far beyond the line at which we have arrived in the direction of extreme precision and almost absolute certainty in the *mechanical performance* of the operations of surgery."

And once more,

"I believe that we have nearly reached to something like final perfection in the *mere art of manipulative surgery*. . . ."

Erichsen is here speaking only of the manual skill of surgeons, and I venture to suggest that it is doubtful whether we are to-day greater masters than our distinguished predecessors. It is true that we cover a far wider field than they. We employ our skill in operations with which they had no concern; but our dexterity, though differently exercised, perhaps possesses no greater excellence. There is a limit to technical skill, not only in surgery, but in work of other artists also—of sculptors, painters, and goldsmiths. Surely no finer technical work has ever been accomplished than that of artificers in days of Tutankhamen: no greater sculptors have delighted mankind than those who laboured in days of Ancient Greece. Has there ever been a finer craftsman than Benvenuto Cellini? Has the brushwork of Chinese artists of 1,500 years ago ever been surpassed? Are there to-day greater painters than those of the years immediately following the Renaissance? If stories can be believed, no finer *manipulators* in surgery have flourished than Liston and Ferguson, the Cramptons and the Coopers, all of whom possessed an almost legendary facility, accuracy, and speed. What has changed since their day is not manual dexterity, not skill nor artistry, but that safety of surgical intrusions which we owe to Lister. And since infection can now be confidently denied entry to any newly inflicted wound, it is obviously and indisputably true to say that the full fruits of Lister's work have now been garnered.

If then it is remembered that every single part of man's body has now been submitted to surgical attack, that in every such attack infection may be prevented, that in the hands of the great masters the mortality is extremely small, and that when death occurs a technical defect in our methods is so very rarely the cause, it is surely evident that the "craft of surgery has almost reached the end of its progress along lines which so far it has followed." If some hundreds of operations are performed in succession upon the Gasserian ganglion or its sensory root without one death, if hundreds of consecutive abdominal operations are undertaken for, say, duodenal ulcer without a death, and so on, and on, it is not the *craft* of surgery which can be much improved, though its use may even yet be extended, but rather the condition of the patient at the time operation is undertaken. We have much to learn in reference to the preparation of patients and in choosing a timely occasion for intervention. Increase in safety will come not from greater skill, but from greater care and from earlier recognition of diseased conditions.

When Lord Dawson says "surely surgery has not reached so gloomy a finality," he lays bare a grave misconception. Surgery made perfect as a craft, not only in respect of technical skill, but in respect also of safety, only then becomes a perfect instrument of research. Scientific surgeons think not of a "gloomy finality," but only of a hopeful and confident beginning, which has already yielded

no small result. Much of my Romanes Lecture was concerned with the future of surgery, and I pointed out the necessity for a closer understanding and co-operation between chemist, physicist, physiologist, and surgeon to ensure and to hasten its *advance*. "The *Advance* of Medicine" was indeed my title. I venture to say that a thought of "finality" has never yet entered the mind of any surgeon. We are, however, confident in our belief that our craft, in the technical skill of the great exponents and in confident exclusion of infections from wounds we make, has put into our hands a safe and supremely valuable instrument, making possible a still greater advance in the science of surgery.—I am, etc.,

Leeds, Aug. 9th. MOYNIHAN.

## SIR CHARLES HASTINGS

SIR,—I have received a copy of an article entitled "The Founder's Birthplace," which appeared in the *Journal* of July 23rd, and since I am given as an authority for the statements made I feel that I have the right to correct the errors contained in it. I am loath to do so, as I am grateful for the evident admiration of the writer for my grandfather, and also because I am not one who regards points of genealogical and topographical interest of great importance in the lives of greater men than Sir Charles Hastings. On the other hand, I think that if facts are worth stating at all they are worth stating accurately.

Sir Charles Hastings was not a "Salopian"; he came of a family long settled on the borders of Oxfordshire and Worcestershire. His father, the Reverend James Hastings, married Elizabeth Paget of Chipping Norton, a lady who had a considerable fortune; James Hastings, mainly with this fortune, purchased the living of Bitterley in Shropshire. He also purchased the livings of Martley and Areley Kings in Worcestershire, and when the living of Martley fell vacant he appointed himself to that living and subsequently sold the advowson of Bitterley. I mention this because in an article which appeared in the *Evening Standard* it was stated that Sir Charles's father was a country parson, had a very large family, and was therefore in impecunious circumstances. The premisses were accurate, but the conclusion drawn was not. The article in your *Journal* goes on to state that there were eleven children, who all grew up "fit and strong." In fact, there were fifteen: five died in infancy and one in childhood; nine grew up.

When Charles Hastings was about 12 or 13 his father went out riding one day. His horse returned without him. When he was found or returned (I am not sure which), his condition showed that he had been in the River Teme, and from that day forward he was never the same person mentally, though he lived to be 100 years of age. Hence, the family fell into straitened circumstances for some years, as James Hastings could not fulfil his clerical duties and the living was not recovered until the youngest son had taken orders. I may say that, according to family tradition, the only person able to manage his father on his return from that ride was his son Charles. But the main point of the article in your *Journal* was that Sir Charles Hastings was born at Bitterley Rectory and not in Ludlow. According to all family tradition he was born at Ludlow, and why the writer should think otherwise I confess I cannot understand.

There used to be in existence a letter from a Mrs. Willes, the daughter-in-law of Chief Justice Willes, stating that as she passed through Ludlow in the early part of 1794 she stopped to change horses and went to see Mrs. Hastings: she described her as nursing in her arms the prettiest baby she had ever seen. That letter was for some time in the possession of my father. He must have seen the date upon it, and must have known whether or not it referred to his father. The Miss Joanna Hastings referred to in the article (who incidentally is buried not at Malvern, as the article states, but at Martley) was the eldest of the fifteen children. She must have been 11 at the date of Sir Charles's birth. She lived till 1886. My father, of course, knew her well, and she surely may be credited with the knowledge of the birthplaces of her brothers. Of course, Sir Charles was baptized at Bitterley, but that was the natural course, as his father was rector of that parish. I do not think there can be any doubt that Sir Charles Hastings was born at Ludlow. Lastly, the maiden name of his wife was not Woodgate, but Woodyatt.—I am, etc.,

Malvern, Aug. 11th. W. G. W. HASTINGS.

## THE ORIGIN OF TUMOURS

SIR,—The argument between Dr. Gye and myself with regard to the filterable agent of the fowl tumour is beset with difficulties, not the least of which is the fact that direct proof of our contentions is not at present available, and therefore we have to rely upon probabilities and deductions from ascertained facts, or what we believe to be ascertained facts.

My reason for thinking that the agents in a tumour filtrate which are capable of producing a fowl tumour are parts of living cells rather than non-living chemical substances, is that according to the known facts about tumour formation a very definite and comparatively long latent period must elapse between the time when the agent is applied and the formation of a tumour; but in the case of the fowl tumours this long latent period does not occur, as the tumour appears to start almost immediately. The only comparable condition is seen in the Jensen's rat sarcoma implanted into another rat—in other words, in those cases in which the tumour is transferred by a graft of living cells.

As Dr. Gye says, some viruses and bacteria can be dried and retain their vitality, but this property is not confined to bacteria or viruses. Planarians can be reduced to 1/100 of their normal size by depriving them of water, and still retain their vitality and power of recovery to their full size; there are other instances of the same phenomenon. Further, there are many examples in the animal kingdom of living organisms which can be de-differentiated by passing them through filters, and which are able to re-differentiate and re-form themselves. One of the *Hydrazoa pennaria*, if passed through fine silk, can reorganize itself completely in a few days. If a hydra is cut into small pieces each piece can reform itself into a complete hydra. Many of the protozoa have this property. The sea squirt, *clavellina*, if deprived of water, becomes almost structureless and is unrecognizable, and yet is capable of complete recovery.

The study of cell behaviour, apart from the organism of which it forms a part, is very recent, and it is only in the simpler organisms that we can study it; but there are many remarkable phenomena known already which seem to point to the fact that the unit of life is not the cell, or even the nucleus, but something smaller. There is therefore no new principle involved in believing that a cell can re-form itself after being de-differentiated, and it appears to fit the facts better than the supposition that a non-living chemical substance, or a virus, causes a change in the cells of the host with such exceptional rapidity.—I am, etc.,

J. P. LOCKHART-MUMMERY, F.R.C.S.

London, W.2, Aug. 9th.

## LIMITATION OF ULTRA-VIOLET THERAPY

Sir,—It is very far from my wish to enter into a correspondence in your columns with a trade representative on the relative merits of the lamps manufactured by his firm and of the other sources of ultra-violet radiation; but I trust you will allow me to deal seriatim with the points that Mr. D. A. Jones raises in his letter which appears in your issue of August 6th.

Mr. Jones commences by chasing the wrong hare. He should pursue the "authoritative pronouncement" of the "most competent members of the medical profession in America who practise ultra-violet light therapy": this appeared in an annotation in the *Journal* of July 9th. From this annotation, which inspired my former letter, it appears that they do not obtain the satisfactory results in America in the U.V.R. treament of alopecia, areata, and furunculosis that we obtain in this country. I am quite in agreement with Mr. Jones that these conditions can be satisfactorily treated by means of the Kromayer lamp. I think, however, that these results can be obtained more readily, and the range of our treatments considerably extended, by employing the more powerful electrical energy supplied by the 15-ampere tungsten lamp and by the more accurate technique that this lamp affords. Curiously enough, despite his criticism, Mr. Jones is probably quite in agreement with me apart from the question of instrumentation, and on this point, in the circumstances, complete accord is hardly to be expected.

As regards the cost of maintenance to which Mr. Jones refers, I believe that there is very little difference between the various types of lamps: possibly, if the liability to fracture and the deterioration of the quartz burner are taken into consideration, the maintenance cost of the tungsten arc is slightly less than that of the quartz lamp.

A few years ago, in conjunction with my hospital authorities, I went fully into the maintenance cost of the tungsten arc; and, including estimated overhead establishment charges, such as lighting, cleaning, heating, salaries, etc., the cost of the tungsten applications worked out at slightly less than a shilling a treatment.

For the past seventeen years I have been vainly endeavouring to induce the instrument makers to manufacture a 15-ampere tungsten arc lamp fitted with a movable hand reflector and four-inch quartz lens mounted on a handle in a protective shield. On technical and clinical grounds I am convinced of the marked superiority of such a lamp. The difficulty that I have encountered appears to me to be a commercial one. The far less efficient tungsten lamps, consuming only 5 amperes, can be employed on the ordinary wiring circuit of the house, and are consequently a far better commercial proposition than the 15-ampere lamp that would require rewiring in order to take the larger current. Why if "manufacturers only exist by serving the public" has such a lamp as I have described not been put on the market?

Electrotherapists are, however, very greatly indebted to the instrument makers, and, of course, could not dispense with their services. Most of the propaganda at the present time in support of electrotherapy is to be found in the catalogues of the instrument makers. The medical journals devote but little space to this very important subject, and medical research councils do not attempt to solve any of the scientific problems that we daily encounter in the course of our work. Day by day the application of electrical energy to the art of healing is passing more and more into the hands of lay workers. This should not be; it is disastrous alike to the suffering public and to the medical profession. The manufacturers do a great deal to assist us, but "business is business," and medicine should not be made subservient to it.—I am, etc.,

Oxford, Aug. 9th. W. J. Turrell.

## VIRUS DISEASES

Sir,—In the comprehensive and interesting survey of medical progress chosen by Lord Dawson as the subject of his presidential address he made one statement which, it is only fair to be allowed to point out, is by no means generally accepted. In a brief reference to the virus diseases Lord Dawson is reported to have said (*British Medical Journal*, July 30th, p. 188) that these are caused by minute "particulate organisms"; and, further, he asked in conclusion, "Do not viruses in essentials 'live and move and have their being' much as do visible pathogenic microbes?" The answer to this question is almost certainly in the negative. There is, as yet, no satisfactory evidence whatever that the minute particles concerned are of animate nature; on the contrary, particularly to a microbiologist, the available evidence is markedly against such a view. Already certain bacteriologists are themselves becoming inclined to recognize that the view that these virus agents are living organisms is, to say the least, open to serious objections. Dible, in his *Recent Advances in Bacteriology* (last edition), even says that while "it requires some effort of the imagination to escape from the habit of regarding a virus infection as a bacterial disease on a smaller scale . . . it is not necessary or even logical" so to regard it. In the last report of the Medical Research Council it is admitted that, on account of the excessively minute size of the minute particles representing the virus, it is difficult to consider the agent of foot-and-mouth disease as being animate—and this is one of the diseases quoted by Lord Dawson as being due to a particulate organism. Such an admission makes a serious breach in the wall of the citadel of the defenders of the microbic view, just because the virus diseases and their causative agents agree among themselves in general and differ in general from bacterial diseases and bacteria.

Recent pronouncements by American workers exhibit much more reasoned caution against accepting the idea that these fine particles are living organisms. It is only necessary to refer to the recent compilation on the virus diseases edited by Rivers. Rivers himself says, for example:

> "No virus has been obtained in an absolutely pure state. Not even the washed granules of vaccine virus can be accepted as representing only virus. Therefore it is impossible to say that virus alone is being filtered rather than virus attached to aggregates of protein or particles of degraded cells."

(It is well to remember in this connexion that Starling says, in his *Principles of Physiology*, that "it has hitherto proved impossible to obtain any preparation of an enzyme which can be regarded as a pure substance, . . . owing to the tendency of enzymes to adhere to colloidal matter.") Now the last sentence in the above quotation from Rivers exactly represents my view, which I first put forward in 1921 and 1922. And my view was based, not on "negative" evidence, but on the positive finding of abnormal haemataboly, indicating the operation of an abnormal blood-digestive ferment in certain of the well-known virus diseases.—I am, etc.,

Walton-on-Thames, Aug. 11th. H. M. Woodcock.

## TREATMENT OF TRIGEMINAL NEURALGIA

Sir,—The article by Dr. Wilfred Harris in the *Journal* of July 16th (p. 87) contitutes a defence of the method of alcohol injection for trigeminal neuralgia, and a reply to the claims that this method should in general be abandoned in favour of the intracranial operation of section of the sensory root of the Gasserian ganglion. The suggestion seems to be that there are two alternative and conflicting methods of treatment, each of which has its advocates and adherents. For example, Dr. Harris's comment that Mr. Jefferson's mortality of two cases in eighty-five is "far too high" appears to me rather severe,

especially in view of Mr. Jefferson's explanation of these deaths in his series. On the other hand, Mr. Jefferson's only use for alcohol injection appears to be as a preliminary affair to accustom the patient to the resultant anaesthesia—a very low value to place upon this procedure. I think it would be unfortunate if the impression were to prevail that the two methods are antagonistic, and that one must adhere to the one or the other school of thought. The truth is that both are highly skilled procedures, and both are extremely successful in the right hands. It seems to me that a definite choice of method should be made in each case. In the younger subjects of this disease there is much to be said for fractional division of the sensory root, and in such cases I am inclined to advise this treatment at the hands of a neurological surgeon ; but if the patient, having had this advice, prefers injection, I carry it out. In the much commoner case of a subject over middle age I am strongly of opinion that an attempt should be made to inject the ganglion before advising operation: repeated injection of the individual trunks is to be deprecated. Carried out by the methods devised and taught for many years by Dr. Wilfred Harris, I can say from a considerable experience that success can be achieved in the large majority of cases, and that no harmful effects should ever be produced. The only modification I have come to prefer is the anterior or Härtel route to the foramen ovale advocated by Mr. Leslie Morris. The method of light morphine-hyoscine narcosis suggested by Dr. Harris I find most successful. In cases in which a single carefully planned attempt at ganglion injection fails to achieve success there is a clear indication to proceed to open resection of the sensory root, the mortality of which operation in skilled hands is extremely low, while the cure is complete and permanent.—I am, etc.,

Newcastle-on-Tyne, Aug. 12th. FREDERICK J. NATTRASS.

## A CASE OF PRIAPISM

SIR,—I have read with the greatest interest the article which appeared in the *Journal* of August 13th (p. 295) on the above subject. I trust that I may be permitted to bring forward, with proper deference, a criticism.

It appears that very exhaustive steps were taken to exclude practically all possibility of the condition being due to any organic lesion. Perhaps I shall be more correct in saying that numerous steps were taken in the way of treatment which, by their admitted failure, appear to have rendered untenable the idea that the malady had an organic foundation. I am struck, however, by the fact that no details are offered hinting at the possibility that the causation of the priapism might have its root in the psychological zone. From this point of view the history seems, in my opinion, to be incomplete. It is still a frequent form of censure of the claims of the psycho-analytic school to say that its dogma is "far-fetched" and too essentially "sexual." But surely it would appear in the case quoted that there seems to be prima facie evidence in favour of giving the "Freudian" aspect of the condition an equally exhaustive consideration. The very fact that the chief organic causes were, in this instance, very satisfactorily excluded renders this point the more forceful. Indeed, the statement that the response to treatment has not been completely satisfactory, in so far as the patient has, since discharge from hospital, become functionally impotent, seems to bear out the contention still more strongly.

I cannot refrain from feeling that it would have been satisfactory to have read in the final clauses of the article that on account of the persistent impotence "it has been deemed proper to refer the case for psychological treatment," and I trust that I shall not be considered as extravagantly favouring the view that there is at least a ghost of a possibility that the state of affairs quoted is a symptom-complex or manifest content of some repression of the libido.—I am, etc.,

CHARLES DAVIES-JONES.

Newport, Isle of Wight, Aug. 14th.

## SEPSIS IN OSTEO-ARTHRITIS

SIR,—Dr. Sydney Pern's incomplete extract from my article on osteo-arthritis in the *Journal* of April 30th shows how a writer's meaning may be distorted by the omission of relevant sentences. In his letter in the *Journal* of August 13th he quotes me as saying:

"'As Glover points out, 75 per cent. of the population over the age of 40 have septic teeth, yet nothing like this proportion suffer from arthritis'; and states further that 'this is abundantly borne out by the multitudes of edentulous patients one sees whose arthritic joints have been in no way benefited by the loss of their teeth.'"

A reference to the article in question will show that what I really said was as follows:

"The association with a focus of infection is not nearly so apparent in this form of arthritis. As Glover points out, 75 per cent. of the population over the age of 40 have septic teeth, yet nothing like this proportion suffer from arthritis. This is not to say that in the treatment of this condition every care must not be exercised to determine the presence of, and to remove, any possible focus. But it is to say that the wholesale extraction of teeth as a routine procedure is unjustified. This is abundantly borne out by the multitudes of edentulous patients one sees whose arthritic joints have been in no way benefited by the loss of their teeth."

—I am, etc.,

London, W.1, Aug. 13th. MATTHEW B. RAY.

## INJECTION TREATMENT OF HERNIA

SIR,—In a most courteous letter Dr. Ignatz Mayer requests that I should not use the word "obturatin" in referring to his solution, as it may give the erroneous impression that it is a proprietary preparation, which it is not. The formula and directions for its preparation have been openly published, and it may be prepared by anyone.

In coining the word it was merely my intention to frame a descriptive epithet on the analogy of many others in common use, but in view of Dr. Mayer's request I shall no longer use it.—I am, etc.,

Hove, August 5th. ST. GEORGE B. DELISLE GRAY.

## TREATMENT OF MEASLES

SIR,—The difficulties of obtaining serum for the treatment of measles naturally suggests that a simpler treatment would, if efficient, be more practicable. The following line of treatment, which I have used in several cases recently with the most satisfactory results, would, I think, be appreciated by the general practitioner.

According to age, give a mercurial purgative—for example, calomel, or pil. hydrarg. col. and hyoscyamus—together with four teaspoonfuls of kaylene at a given hour. Two hours later give hexamine in a drink of glucose. Two hours after this give hot castor oil (one-half to one ounce) in hot orange juice drunk from a warmed glass. For after-treatment give alkalis (citrates) lemon and glucose, and starchy foods (biscuits, etc), until the urinary reaction is alkaline. Follow with calcium, as chloride, with or without an acid tonic, and tab. parathyroid (1/40–1/20 grain) once daily. Diet should consist chiefly of fruit juices, carbohydrates, etc. There should be no protein in any form—that is, no milk, beef teas, eggs, or soups.

In every case treated by the above method from the day the patient was seen (generally when the rash appeared), three to four days was all that was required to have the patient quite well and with no complications.

This line of treatment was evolved as a result of the urinary findings I observed in these cases, which usually showed acid + +, bile +, and/or urobilinogen + +, acetone +, urates and *Bacillus coli* frequent, indican + +. I regarded this as an allergic or anaphylactic condition of intestinal hepatic origin associated with a breakdown in the defensive mechanism of the liver. Urobilinogen is indicative of such, and is the most delicate test for hepatic insufficiency. The use of the liver purgative, with kaylene to act as an absorbent, of glucose to nourish the liver cells, and of hexamine, regarded by the French as potent in combating intestinal allergy, with, after all these have been given time to act, the clearing out of the intestinal tract with castor oil—all seemed to me a sound line of reasoning. The results have surprised me beyond measure.—I am, etc.,

Darlington, August 6th. R. Chalmers.

## THE " NORMAL " TEMPERATURE

Sir,—The unreliability of axillary temperatures in ambulant patients was fully recognized thirty years ago, at all events amongst those concerned with pulmonary tuberculosis. In whichever way the body temperature is taken, three groups of things must be taken into account—those affecting the local circulation, the temperature of the body generally, and the heating or cooling effect of the surroundings.

Unless the superficial vascular plexus is well filled the local temperature is not an accurate measure of the general blood heat. The algid stage of cholera is an extreme example ; but clothing or bedclothes, rest or exercise, weather conditions, exposure to wind or otherwise, may also make a great difference. Until the site chosen—be it axilla or mouth—has had time to recover its temperature after being cooled down by the air, accurate thermometry is not possible. This takes a long time for the axilla, and may take from ten to thirty minutes by the mouth, as this is cooled down inside every time it is opened, and irrespective of the kind of thermometer employed. Further details are given in my book entitled *Domiciliary Treatment of Pulmonary Tuberculosis*.—I am, etc.,

Farnham, July 30th. F. R. Walters.

Sir,—I have read with the greatest interest Dr. Paton's article, in your issue of July 23rd, on temperature readings taken from adolescent girls. The importance of temperature readings is undoubtedly considerable, and it would be well if we were more scientific and conscientious in taking and recording them.

I would be really grateful if Dr. Paton would state what he considers the best method of taking the temperature by the mouth. Should the thermometer be placed as far back in the mouth as conveniently possible? Is it important that it be closely hugged by the tongue, or should it merely lie beneath the latter? Must the ordinary N.P.L. half-minute thermometer remain in the mouth for two or for three minutes? It seems obvious that these details greatly modify temperature readings. Also it is clear that—other things being equal—a reading taken from an edentulous patient, in whom a greater area of the thermometer is in contact with soft tissues, would not be the same as one taken from a patient in whom it was to lie over the teeth.

What are Dr. Paton's views about the child of school age, familiar enough to most practitioners, who appears to be perfectly healthy and happy and presents no abnormal physical sign except a persistent evening temperature of about 99°? With what truth can it be said, in explanation of such cases, that everyone has " their own normal? "—I am, etc.,

London, N.W.11, Aug. 1st. Helen C. Scott.

## SECTION OF OTO-LARYNGOLOGY

### Corrigendum

Sir,—I wish to draw attention to an error in the report of the discussion on otitis media recently held by the British Medical Association (Oto-laryngology Section) and recorded in the *Journal* of August 6th. In this it is stated that I said, " in many patients *in extremis* mastoidectomy gave the most excellent recoveries." Actually the text of the paper which I read ran as follows: " Antrotomy has only been performed in a small number of cases and the results have not been encouraging." In view of the fact that it is hoped to publish a full account of this investigation, of which the paper read at the meeting was only a summary, it is desirable that this error should be noted ; otherwise the two reports will be inconsistent.—I am, etc.,

London, W.1, Aug. 16th. Jean Smith.

# Obituary

## CHARLES WILSON, M.D.Ed.

The death has occurred, at the age of 79 and after an illness of several months, of Dr. Charles Wilson of Crewe. An Ayrshire man, Dr. Wilson was educated at the Irvine Academy and had his medical training at Glasgow University, where he graduated M.B. in 1876, M.D. in 1884, receiving the L.R.C.S.Ed. in 1876. From Muirkirk, where he was assistant surgeon to an ironworks, he moved to Nantwich, and eventually settled down in Crewe, with which he was associated for over fifty years. He took a great interest in public affairs, and devoted a considerable part of his time to educational and philanthropic work. He 1897 he had a seat on the town council, becoming mayor three years later, and a borough magistrate in 1906. He was a Fellow of the Linnean Society and a member of the Lancashire and Cheshire Branch of the British Medical Association. Amongst his other activities he was medical officer to a number of friendly societies.

An attractive personality, he was a friend and benefactor of the poorer section of the community, and his kindly word and genial smile endeared him to all. A life-long Liberal, Dr. Wilson died a bachelor, and none of his relatives survives him.

## THE LATE PROFESSOR MATTHEW HAY

Professor J. A. MacWilliam writes:

The long and strenuous career and the outstanding personality of Professor Matthew Hay have left a deep impress on both the University and the city of Aberdeen. Besides doing highly efficient work as professor of forensic medicine he created and developed (without remuneration) a new public health department in the University very many years ago. A member of the University Court from 1889 till a few years ago and manager of its finances as chairman of the Finance Committee, he bore the leading part in the large schemes of extension and development which, beginning in the late 'eighties, transformed the University. His masterly handling of its affairs in periods of doubt and difficulty was invaluable. In the city of Aberdeen his public health work placed him as one of the foremost authorities on this subject in the United Kingdom. Professor Hay always carried on his work in the light of far-reaching policy ; his long term of office was signalized by the projection and elaboration of new schemes and organizations, the excellence of which has been recognized and the mechanisms often reproduced in other parts of the country. He was the original projector of the joint hospitals scheme, and he planned and carried out numerous large and fruitful developments dealing with tuberculosis, maternity and child welfare, venereal

diseases, and other subjects, school inspection, in addition to doing valuable work on the Carnegie Trust, the Medical Research Council, the General Medical Council, etc. All through Professor Hay's long years in both university and city his indefatigable energy, his remarkable initiative and constructive powers, and his statesmanlike qualities of mind have, by common consent, been of vital importance to the country and to the University in all its different faculties and activities—for his keen interest was intent upon them all.

But apart from all that he achieved in his laborious life, never looking for reward or public applause, the striking personality of Matthew Hay stood out. Lofty idealism, absolute sincerity, a passion for fairness and sanity of view, rare unselfishness, and untiring helpfulness were the keynotes of his character. His warm humanity, his tolerance, and breadth of sympathy were as conspicuous as the range and capacity of his acute and ever-active mind with all its varied interests and enthusiasms. He was too unsparing of himself, and his unremitting exertions too soon wore down his physical mechanism. The memory of this man of fine brain and great heart will long be cherished amongst all the classes of our community.

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By the sudden death, on July 31st, of Dr. WILLIAM LAWSON, Glasgow has lost one of its most prominent medical men. Born at Rothesay in 1863, Dr. Lawson studied medicine at Glasgow University and graduated M.B. in 1895, proceeding M.D. in 1900. For nearly forty years he practised in Pollokshields. Dr. Lawson took a considerable interest in public work and in medico-political matters. He was a member of the Insurance Acts Subcommittee (Scotland) from 1921 to 1931, and of the Scottish Subcommittee for the sessions 1920–1 and 1921–2. He is survived by his wife, a daughter, and two sons, one of whom is Dr. D. Douglas Lawson, a practitioner in Pollokshields.

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The death has occurred in a London nursing home, after a short and sudden illness, of Dr. C. J. Thompson, L.R.C.P.Ed., L.M., M.R.C.S.Eng., of 8, Byfield Gardens, S.W.13, and recently of Queen Mary's Hospital, Roehampton. A colleague writes: The death of Dr. C. J. Thompson will come as a great shock to his wide circle of friends. A flourishing general practitioner in Newport, Isle of Wight, when war broke out, he immediately volunteered for military service, and was appointed civil surgeon to Parkhurst Barracks, where he had a very strenuous time attending to the medical needs of the numerous troops that passed through that centre. Thompson was suffering from a prolonged and serious illness contracted whilst at work there when his only son was killed in France. His practice had to be sold, and it was in this way that, when sufficiently recovered, he came to take up work under the Ministry of Pensions in 1921 at the Queen's Hospital for Face and Jaw Injuries at Sidcup. He was an indefatigable and most conscientious worker in whom everyone placed implicit trust. His extensive practical experience of medicine and men made his services invaluable, while he kept himself abreast of the times by assiduous reading in his spare time. When the facial cases were transferred to Queen Mary's Hospital, Roehampton, Thompson went with them, and until a few weeks ago he was doing full-time duty there.

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The following well-known foreign medical men have recently died: Professor FÉLIX KLEMPERER, director of the medical department of the Berlin Reinickendorf Hospital, co-editor of *Neue Deutsche Klinik* and *Therapie der Gegenwart*, aged 65; Dr. JEAN FRANÇOIS HEYMANS, emeritus professor of therapeutics at Ghent University, and founder of *Archives internationales de pharmacodynamie et de thérapie*; and Dr. JOSEPH DENYS, professor of bacteriology at Louvain, and author of works on immunity and tuberculosis.

# Medical News

The St. Bartholomew's Hospital old students' annual dinner will be held on Monday, October 3rd, in the Great Hall of the hospital, at 7 for 7.30 p.m., with Professor George E. Gask in the chair. The honorary secretaries are Sir C. Gordon-Watson and Mr. Reginald M. Vick.

The annual dinner of past and present students of St. Mary's Hospital Medical School will be held at the Trocadero Restaurant on Friday, September 30th, at 7 p.m.

The old students of St. Thomas's Hospital will hold their dinner at the Dorchester Hotel, Park Lane, on Friday, October 7th, at 7.45 p.m. Major-General Sir Guise Guise-Moores, K.C.B., will be in the chair.

Two courses of lecture-demonstrations on neurology will be held at the National Hospital, Queen Square, W.C., from October to December, 1932, and from January to March, 1933. They will include demonstrations on anatomy, physiology, pathology, and post-mortem material, as well as lectures on the principles of neurology and on nervous diseases. The fee for each course will be ten guineas; special arrangements will be made for those unable to take the whole course.

The Fellowship of Medicine and Post-Graduate Medical Association has arranged for a special week-end course in clinical surgery to be given at the Royal Albert Dock Hospital on September 3rd and 4th: special reference will be made to the relation of technique and end-result, as judged by the period of disability in the shipping industry. A post-graduate course in diseases of the chest will be held at the Brompton Hospital from September 5th to 10th. A course in psychological medicine will take place at the Bethlem Royal Hospital on Tuesdays and Fridays at 11 a.m. from September 6th to 30th. Individual clinics at various general and special hospitals in London are available daily, direct arrangements for attendance at which must be made with the Fellowship of Medicine. All courses of instruction, clinics, etc., arranged by the Fellowship of Medicine are open only to members.

The seventh French Congress of Stomatology will be held in Paris in October, when the following subjects will be discussed: non-specific osteitis of the upper jaw, introduced by Cadenat of Toulouse and Vilinsky of Paris; cervico-facial mycosis, introduced by Dechaume of Paris; and indications and contraindications of urgent extractions, introduced by Raison of Paris. Further information can be obtained from the general secretary, Dr. Lattès, 54, Boulevard Saint Michel, Paris, VIe.

The report of the Queen Alexandra Sanatorium Fund for the year 1931-2 shows that the number of grants allotted to assist patients receiving treatment for tuberculosis at Davos was 32; but possibly owing to the propaganda against going abroad and the uncertainty as to the cost of living at Davos a number withdrew their applications. Further information about the Fund and particulars of the assistance given can be obtained from the honorary secretary, Mr. A. Stanley Herbert, 25, Birchin Lane, London, E.C.3, or from the local secretary, Mr. W. G. Lockett, Davos-Platz, Switzerland.

The committee responsible for the publication of the *History of the British Medical Association* has decided that the copies now available on the termination of the Centenary Meeting may be placed on sale. The price at which they are to be sold is 4s. 6d., postage paid. Orders should be sent, with remittance, to the Financial Secretary and Business Manager, B.M.A. House, Tavistock Square, W.C.1.

The portrait of Dr. Aitken of Blackburn, which has been subscribed for by friends, will be presented to him by Lord Moynihan of Leeds at a gathering to take place at the Lecture Hall, Public Halls, Northgate, Blackburn, on Thursday, September 1st, at 3.45 p.m.

Dr. Juan Peset, editor of the *Cronica Medica*, has been elected rector of the University of Valencia.

# Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to **The EDITOR, British Medical Journal, British Medical Association House, Tavistock Square, W.C.1.**

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated. Correspondents who wish notice to be taken of their communications should authenticate them with their names, not necessarily for publication.

Authors desiring REPRINTS of their articles published in the *British Medical Journal* must communicate with the Financial Secretary and Business Manager, British Medical Association House, Tavistock Square, W.C.1, on receipt of proofs.

All communications with reference to ADVERTISEMENTS, as well as orders for copies of the *Journal*, should be addressed to the Financial Secretary and Business Manager.

The **TELEPHONE NUMBERS** of the British Medical Association and the *British Medical Journal* are *MUSEUM* 9861, 9862, 9863, and 9864 (internal exchange, four lines).

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The address of the Irish Office of the British Medical Association is 18, Kildare Street, Dublin (telegrams: *Bacillus, Dublin*; telephone: 62550 Dublin), and of the Scottish Office, 7, Drumsheugh Gardens, Edinburgh (telegrams: *Associate, Edinburgh*; telephone: 24361 Edinburgh).

## QUERIES AND ANSWERS

### Cure for Snoring

Dr. G. H. JOHNSON (Romsey) writes: Can any of your readers suggest a remedy for snoring? My patient is an elderly female. She has been examined by an ear, nose, and throat specialist, who found nothing abnormal. Fifteen years ago she had an operation for exophthalmic goitre and has been in excellent health since. Chin-straps and various medicaments have been tried with no good result.

### Injection for Hydrocele

Dr. S. BARTLETT (Isle of Barra) writes in reply to "H. C.'s" inquiry (July 30th, p. 228): I have frequently used both tinct. iodi fortis and quinine urethane solution for the injection of hydrocele. On one patient these solutions did not give a satisfactory result, and I decided to use sodium morrhuate. After the injection the patient complained of acute abdominal pain, began to sweat profusely, and was doubled up in bed; his pulse ran up to 140. This acute condition lasted for almost two hours, but by the evening he was quite normal and next day carried on as usual. The hydrocele was cured, but since then I have never used sodium morrhuate.

### Income Tax

*Additional Consulting Room*

"A" inquires whether he can charge against profits the expenses incurred in converting one of the rooms of his residence into an additional consulting room.

*** No. The cost represents an outlay of capital and not a current expense; but, of course, as from the date of conversion "A" will be entitled to claim a higher ratio of the rent and rates, etc., of the premises as applicable to professional use.

## LETTERS, NOTES, ETC.

### Sea-sickness

Dr. H. NORMAN BARNETT (Bath) writes: The medical correspondent of the *Morning Post* would appear to be somewhat behind the times when he writes drawing special public attention to the view expressed by Dr. Gwynne Maitland that sea-sickness is due to a disturbance of the "balancing apparatus." It is many years since my book, *Sea-sickness—its Cause and Cure*, was published. In it I gave what I think was pretty conclusive proof that sea-sickness was due to a disturbance of the endolymph, and also directed attention to the work of Dr. Savory on this subject. That, according to the extract in the *Morning Post*, there is no cure for sea-sickness because it is due to the above causation is very far from what I believe to be the truth, since, as I pointed out in the publication referred to, bringing the endings of the auditory nerve under the strong influence of ammonium bromide has a most salutary effect in the prevention and cure of sea-sickness, as that drug has a special influence on the auditory nerve. The suggestion that prospective travellers should have a course of a sort of P.T. exercise involving rotary movements is, in my view, perfectly futile, since the effect of such movements is one of the proofs of the origin of sea-sickness. They will cause a similar form of sickness, but will not prevent it should the passenger encounter rough weather. It will be found that if he is brought under the influence of the ammonium bromide for thirty-six hours before embarking, and it is continued for forty-eight hours afterwards, sea-sickness will not develop even in those most prone to it. The dosage, however, must be large—namely, 40 to 60 grains a day, according to the type of patient.

### Holidays for Factory Girls

We have received the following letter, signed on behalf of the Factory Girls' Country Holiday Fund by the Countess of Sandwich, the Bishop of London, Bishop Paget, Lady Margaret Loch, Sir Thomas Barlow, and Miss Lilian Braithwaite: The Fund exists to provide at least a week's holiday in the country for the poorest girls and women employed for long hours in the hard monotonous work of London factories. They need a breath of fresh air with rest in peaceful surroundings more than most of us, and those who know them best will be first to say that they deserve it. Their letters tell us how intensely they enjoy it. They come back wonderfully invigorated and refreshed, and with a very pleasant memory of the kindness they have received and the friends they have made in their country homes. The work will seem to cost very little as compared with the good it does, for in 1930 £1,542 enabled the Fund to provide board and lodging for 1,030 girls and women for 1,250 weeks. The need this year is more urgent than ever. In consequence of the widespread unemployment of fathers and brothers, with "short time" and "time off" themselves, the girls are bearing their full share of the financial burdens which most people have to shoulder at the present time. They cannot make the contribution which otherwise they are so ready to make. Unless more money comes in the Fund may have to stop sending the girls away. We appeal to those who, even in bad times, can manage to get a holiday, and ask them to help these patient, cheerful workers to get that which does them so much good. Subscriptions and donations may be sent to Mrs. Slater, honorary treasurer, or to Miss Canney, 75, Lamb's Conduit Street, W.C.1.

### A "Dope" Museum

The League of Nations at Geneva is gradually accumulating a museum, which already contains many interesting objects, including what may be called trophies of its twelve-year enterprise in various international fields. Among other things it possesses a collection of narcotics presented by the Egyptian Government. These furnish an interesting commentary upon the ingenious resorts which drug addiction, or the trade which battens on it, can employ. Here one may see hashish in various forms, including powder, as imported by smugglers; also poppy-head, with the cuts to allow the milk to exude. Morphine tablets and syringes, with spoons for sniffing heroin, are also on exhibition. A drug called manzul, which is a mixture of narcotics and spices, sold to the public disguised as chocolate or other sweetmeats, has evidently a vogue in Egypt, and the rollers and brass moulds used for making up this product into tablets are shown. Another device consists of false seals for restamping wax on bottle corks so as to cover up some act of smuggling. A sham oil lamp is shown in which drugs were found hidden; it is also shown how bricks of hashish were embedded in a cement millstone; but perhaps the most extraordinary thing of the kind is a pair of shoes which were imported with hashish cunningly embedded in the soles. An artificial opium, made of spices, brickdust, and gum, painted over with a mixture of opium and white of egg, has its devotees.

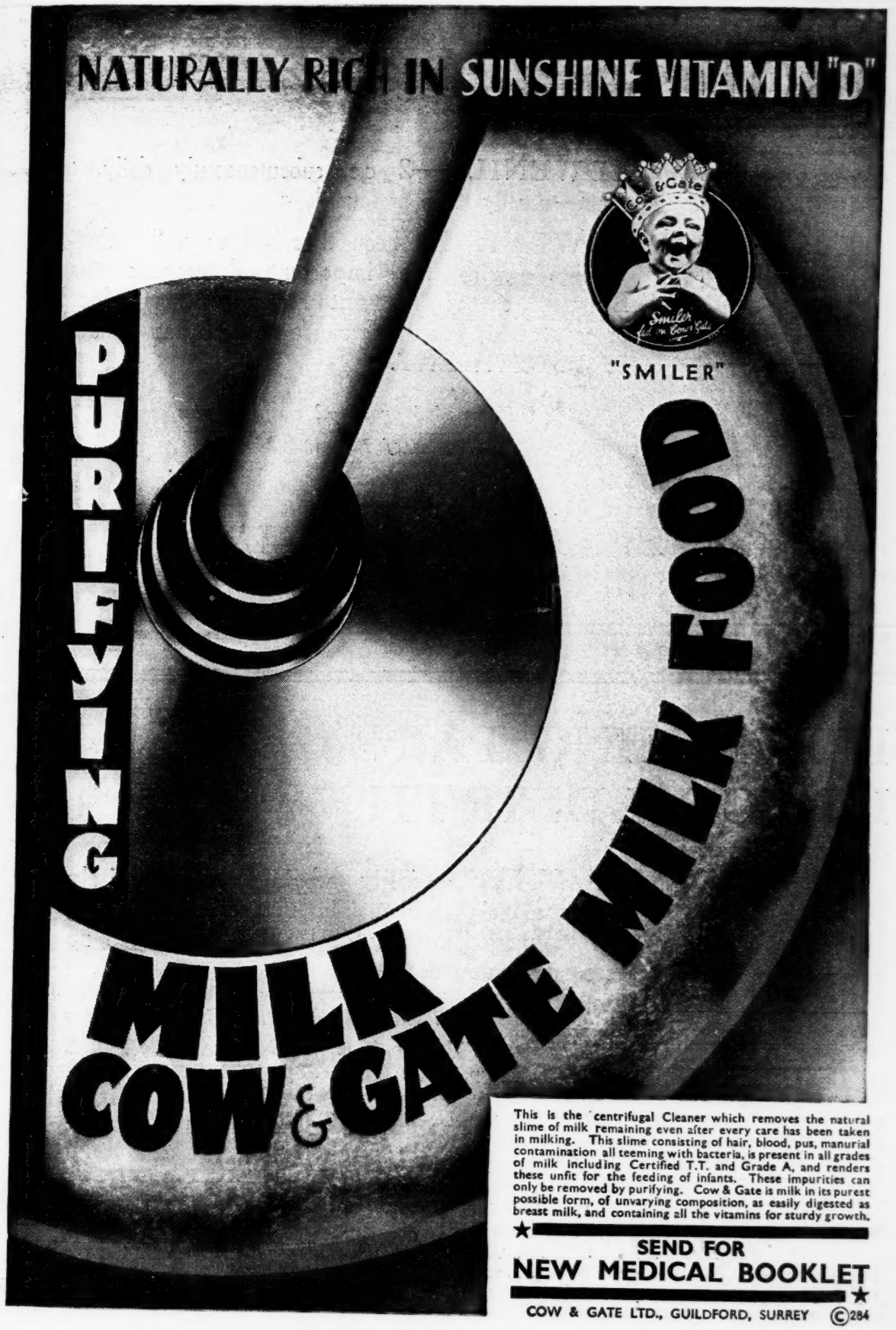
### Treatment of Warts

ARTHUR T. TODD-WHITE (Leytonstone) writes: We see all sorts of drugs recommended for warts, but I have never found the following, almost childish, remedy fail. Wet the wart two or three times a day and rub it with a lump of ordinary "washing soda." It generally takes effect in about ten days.

### Vacancies

Notifications of offices vacant in universities, medical colleges, and of vacant resident and other appointments at hospitals, will be found at pages 36, 37, 38, 39, 42, 43, and 44 of our advertisement columns, and advertisements as to partnerships, assistantships, and locumtenencies at pages 40 and 41.

A short summary of vacant posts notified in the advertisement columns appears in the *Supplement* at page *160*.

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